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TITLE: Project INSPIRE-HBCU Undergraduate Collaborative Summer Training
Program to Inspire Students in Prostate Cancer Research

PRINCIPAL INVESTIGATOR: Nagi Kumar, Ph.D.

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14. ABSTRACT The overall goal of Project INSPIRE is to provide continuum of opportunities including didactic and meaningful research experience and training in basic, biomedical, clinical and/or population sciences research for promising undergraduate students enrolled at Florida A & M University (FAMU), who are at an important career-decision-making point, in a host institution such as the Moffitt Cancer Center (MCC), with an established record of achievement in prostate cancer research, that will lead to attracting this group into careers that focus on prostate cancer research. The objectives outlined for this project will be completed in three years. As proposed, we recruited 3 students from FAMU during the summer of 2006, who were matched with their mentors and all completed the program as proposed. Four pilot projects completed by the interns in the program and research reports and 7 scholarly papers (1 to be presented at a National meeting) have been presented at scientific meetings. All 4 students have demonstrated interest in graduate study to continue their work with prostate cancer.					
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I. Introduction:

It is estimated that 232,090 new cases of prostate cancer (CaP) will be diagnosed in the US in 2005 and 30,350 men will die of this disease making CaP the second leading cause of cancer deaths in American men. This is more so in the African American population, where an estimated 30,770 cases of prostate cancer are expected to occur in 2005 accounting for over 42% of all cancers in this population and 5,050 will die from this disease (ACS 2007) ¹. Between 1997-2001, the prostate cancer incidence rate was on an average 60% higher and the death rate 2.4 times higher in African American men than in white men. For AA men with a family history of hereditary CaP, the increased risk is even greater ². Autopsy studies and clinical findings support the argument that CaP exhibits more aggressive biological behavior in AA men than that observed in other populations. As recognized by the U.S. Department of Defense (DOD), to successfully address these challenges of disparities in prostate cancer incidence, mortality and morbidity, the number of Historically Black Colleges and Universities (HBCU) scientists who are trained as prostate cancer researchers need to increase. This is because, HBCU scientists, due to the mission of HBCU institutions, focus their health care research on disparities experienced by the minority population. More importantly, minorities traditionally trust HBCU researchers and are more likely to cooperate with them in addressing health issues in their community. In spite of recommendations to increase African American scientists in this field of research, with several training and career development programs established by the National Institute of Health (NIH) and DOD to increase the number of minority scientists, there is a gap in the early phases of the training pipeline, including the current prostate cancer education, training and research activities for undergraduate students at Florida A&M University (FAMU), a Historically Black Colleges/Universities (HBCU). There is thus a critical need to inspire and increase the number of young scientists from underserved groups and create a cadre of culturally sensitive well-trained scientists to improve research and ultimately contribute to reducing this disproportionate burden of prostate cancer incidence and mortality in African American men. Project INSPIRE will begin to address this weakness.

The overall goal of Project INSPIRE is to provide continuum of opportunities including didactic and meaningful research experience and training in basic, biomedical, clinical and/or population sciences research for promising undergraduate students enrolled at Florida A & M University (FAMU), who are at an important career-decision-making point, in a host institution such as the Moffitt Cancer Center (MCC), with an established record of achievement in prostate cancer research, that will lead to attracting this group into careers that focus on prostate cancer research. The objectives outlined for this project will be completed in three years.

II. BODY:

The proposed undergraduate training program, Project INSPIRE, was designed to create and nurture opportunities and promote careers in prostate cancer research for aspiring and promising undergraduate students from FAMU, a HBCU. The program has created links between established scientists and aspiring undergraduate students at the junior level at FAMU, and will provide didactic and research experiences and training in basic, biomedical, clinical and population sciences research, specific to prostate cancer. Under the direction of Moffitt research faculty, students have worked in an area of study such as basic research or cancer control, and learn research skills while being exposed to an enriching scientific environment. Working with experienced investigators, scientists and physicians, the students planned, conducted and record scientific observations and studies, gaining experience in daily research and learning to function independently as well as part of a team. Students attended seminars and interacted with the current members of internship programs – in Project LINK and SPARK, in addition to graduate and postdoctoral fellows. Because an important goal of the program was to facilitate students' connections to the next steps in a cancer research career, we made available and continue to keep students informed about career opportunities in conjunction with NCI's CURE program, graduate programs, other internships that will prepare them for graduate studies. Project INSPIRE office has served as a clearinghouse of information. We expect students to remain in contact with Moffitt Cancer Center and the CURE program for continued career opportunity enhancements.

There were no major technical difficulties encountered during the summer internship program pertaining to student conduct nor completion of the requirements of curriculum proposed nor from the faculty. Although these were summer months and a time when faculty take their vacations, we paired several of the faculty members with co-mentors, that permitted continuous mentoring of interns during the entire summer.

AT THE END OF THE SUMMER 2006, WE CONDUCTED AN EVALUATION OF THE STUDENTS AND FACULTY OF PROJECT INSPIRE CLASS OF SUMMER 2006.

MAJOR RECOMMENDATIONS FROM STUDENTS:

- ACCOMMODATION IN THE DORMS COULD BE BETTER.
- Food services closed early. Did not allow for flexible dining
- On-line didactic session too complex for undergraduate students. Concern about testing.

Changes made in Year 2 of the Summer 2007 internship:

- Will evaluate alternate dorms in the University of South Florida area

- Will provide vouchers for dining access at the Moffitt Cancer Center dining facilities
- Completion of the on-line didactic session will be a requirement and PI will work on simplifying this session to an undergraduate level.

MAJOR RECOMMENDATIONS FROM FACULTY:

-PREFER TO SELECT STUDENTS FROM A LARGER POOL OF STUDENTS

Changes made in Year 2 and 3 of the Summer 2007 internship:

Being the first year, we received a limited number of applications to select from. (16 applications). These were screened by PI at the 2 institutions prior to assignment to investigators at Moffitt. We plan to revise the program based on the recommendations in Years 2 & 3 and repeat tasks undertaken in year 1 after incorporating these changes. In addition to the PI at Moffitt and the program coordinator at FAMU, we have now included the Summer Internship Program Project INSPIRE alumni students in marketing the program during the campus visit to FAMU to recruit interns for FY 2007.

III. Key Research Accomplishments:

Based on the goals of Project INSPIRE, the following objectives were developed and met during this period:

- a)Developed a didactic and research training program that specifically inspires, creates opportunities and promotes careers in prostate cancer research for aspiring undergraduate students drawing on the elements of mentoring, collaboration and networking;

TASKS:

Months 1-2: Faculty met and outlined content of Didactic curriculum
Assigned content areas to experts in the field
Finalized didactic training curriculum & evaluation
Content of modules due in project office and evaluation at the end of 6 weeks(Appendix 1)
Sent letters to faculty actively involved in prostate cancer research at Moffitt Cancer Center to invite participation as mentors for the summer training and internship program
Finalized a minimum of 4-6 mentors for the year 2006-2007
Met with Advisory Committee for final approval of curriculum and list of mentors.

Mentors Selected:

(a)Nagi Kumar, Ph.D.(Program Director)

Director, Department of Nutrition Research
Associate Professor, Department of Interdisciplinary Oncology,
Division of Cancer Prevention and Control
University of South Florida College of Medicine

(b) Paul Jacobsen, Ph.D.

Program Leader, Health Outcomes & Behavior
Professor, University of South Florida,

Department of Interdisciplinary Oncology, College of Medicine,
Division of Cancer Prevention and Control

(c) **Cathy D. Meade Ph.D, R.N., F.A.A.N.,**

Professor, University of South Florida

Department of Interdisciplinary Oncology, College of Medicine,
Division of Cancer Prevention and Control

Director of the Education Program at the H. Lee Moffitt Cancer
Center & Research Institute

(d) **Dr. Clement Gwede, Ph.D.**

Assistant Professor, Department of Interdisciplinary Oncology,
College of Medicine, Division of Cancer Prevention and Control
Cancer Control

(e) **Dr. Susan Vadapampil, Ph.D.,**

Assistant Professor in the Health Outcomes and Behavior Program
at H. Lee Moffitt Cancer Center

(f) **Dr. Srikumar Chellappan, Ph.D.**

Professor, University of South Florida,

Department of Interdisciplinary Oncology, College of Medicine Drug
Discovery Program

Met & Oriented mentor/faculty from Moffitt and Faculty Advisor from
FAMU

Curriculum

Program Content

Location of interns at MCC/phone/e-mail/Housing

Assignment/Calendar

(b) Placed 4 undergraduate students during the months of June –August 2006
summer in a peer-reviewed funded research environment designed to foster
learning, provide positive researcher/student interactions, and cultivate an
interest in a prostate cancer research career.

TASKS:

Months 1-5 Publicized/Marketed Summer Internship Program at FAMU by PI
from Moffitt Cancer center and Coordinator from FAMU meeting with potential
students at FAMU campus and publicizing the program opportunity. Content
covered:

Program philosophy, goal and objectives

Application Requirements

Reviewed Applications

Interviewed potential students

Selected students & matched with mentors

Finalized and informed candidates by a formal letter

Received acknowledgement of acceptance from students

Sent information package to students

Dates-orientation/program

Mentor/contact information

Accommodation information and contracts signed

Tampa city/MCC/University campus information mailed to students

Table: 1 The Following Candidates were selected from FAMU to participate as the Class of Summer 2006 in Project INSPIRE and matched with mentors/Research Topics:

FAMU Student Interns	Moffitt Faculty Mentors	Research Topic
Carrol, Jarrod A.	Cathy D. Meade Ph.D, R.N., F.A.A.N.,	An exploratory study to evaluate and increase prostate cancer education and awareness among African American men
Harrison, Lakeitha V.	Dr. Srikumar Chellappan, Ph.D. and Dr. Nagi Kumar, Ph.D.	EGCG Induced Cell Death in Prostate Cancer Cells
Lightbourn, Alrena V.	Dr. Clement Gwede, Ph.D.	Perceived barriers to prostate cancer screening among black men residing in Hillsborough county, FI
Oniyelu, Matilda M.	Paul Jacobsen, Ph.D. and Susan Vadaparampil, Ph.D.	Impact of LHRH Agonists on Cognitive Function in Prostate Cancer

Month 6-8 Summer Internship/Training Program Completed

Orientation- badges, e-mail addresses, introduction to mentor/policies & procedures
 Input student information into the tracking system
 Begin research experience
 Begin monthly seminars
 Begin didactic session on-line
 Complete pilot study
 Presentation on Research day
 Complete on-line exam /evaluation for completion of didactic session

Table 3: FORMAL FAMU INTRODUCTORY DIDACTIC TRAINING SESSION

Module #	Module Title	Moffitt Instructor
1	Fundamental and Principles of Prostate Cancer Prevention	Dr. Nagi Kumar
2	Fundamental and Principles of Prostate Cancer Prevention	Dr. Clement Gwede
3	Socio-psychological factors related to Prostate Cancer – Implications in screening, prevention and treatment	Dr. Susan Thomas Vadaparampil
4	Diagnosis and Treatment of Prostate Cancer	Dr. Meyer Fishman
5	Cancer, Culture and Literacy: Implications in the African American Population	Dr. Cathy Meade
6	Genetic Markers and Polymorphisms in Prostate Cancer	Dr. Wenlong Bai
7	Fundamental and Principles of Prostate Cancer Treatment	Dr. Julio PowSang
8	Molecular Targets – Prostate Cancer Biology	Dr. Linda Mora-Diaz
9	Ethical Issues in Research/Research Designs/Methods	Dr. Nagi Kumar/ Dr. Craig Beam
10	Preparing Successful Grant Applications	Dr. Nagi Kumar

(c) Create a series of support networks/activities to assist both students and mentors in their role by utilizing cancer center, university, community and national resources.

TASKS:

Month 9

Conduct on-going evaluation-

FAMU students

Program

Mentor evaluation

Monitor & track students

Provide information regarding follow up

Seminar presentation of pilot study

Report in peer-review journals

Other presentations and publications

Month 10-12 Review and report findings of evaluation to Advisory committee

Review and revise program/curriculum

Continue to track students- monthly e-mails/provide information on pertinent seminar/continuing education information.

Access to seminars and lectures at Moffitt Cancer Center

Invite Alumni to participate in Research day annually

Newsletter regarding accomplishments of participants and progress in prostate cancer research

IV. Reportable Outcomes:

The reportable outcomes of Project INSPIRE for year 2006-2007 were as follows:

(1) We have increased interest in prostate cancer research and the problems of health disparities as indicated by increase in the number of interested students each year to be admitted to this program.

As proposed, we recruited 4 students from FAMU during the summer of 2006, who were matched with their mentors and all completed the program as proposed. (Table 1).

Since the first group completed the internship in August 2006, the interest at FAMU among undergraduate and graduate students has increased significantly. Dr. Kumar completed 6 information sessions at FAMU in January 2007 on FAMU campus focusing on several majors- biology, chemistry, pharmacy, social sciences, nursing and environmental sciences programs.

(2) Thus far, the 4 pilot projects completed by the interns in the program (Appendix I- Presentations) have contributed to all the 4 research programs and the ongoing studies in this area. Four research reports of the work completed is enclosed. (Appendix II)

(3) Thus far, we have 6 scholarly paper presentations based on their pilot studies have been presented at scientific meetings.

a. Lightbourn, Alrena V. Barriers and Motivations to Prostate Cancer Screening Among Black Men Residing in Hillsborough County, Florida. Florida A&M University 2006 Research Forum (Nov 3, 2006). Poster Competition (3rd Place).

b. Lightbourn, Alrena V. Graduate Seminar: Implementation of Behavioral Research Methods to Evaluate Psychosocial Factors Influencing the Decision for Prostate Cancer Screening among Black Men from Hillsborough County, Florida. Florida A&M University (Oct 12, 2006).

c. Lightbourn, Alrena V. Barriers to Prostate Cancer Screening Among Black Men Residing in Hillsborough County, Florida. Research Day – American Cancer Society/H. Lee Moffitt Cancer Center Summer Internship Programs Research Day (July 31, 2006).

d. Carrol, Jarrod A. An exploratory study to evaluate and increase prostate cancer education and awareness among African American men. American Cancer Society/H. Lee Moffitt Cancer Center Summer Internship Programs Research Day (July 31, 2006).

e. Harrison, Lakeitha V. EGCG Induced Cell Death in Prostate Cancer Cells. American Cancer Society/H. Lee Moffitt Cancer Center Summer Internship Programs Research Day (July 31, 2006).

f. Oniyelu, Matilda M. Impact of LHRH Agonists on Cognitive Function in Prostate Cancer. American Cancer Society/H. Lee Moffitt Cancer Center Summer Internship Programs Research Day (July 31, 2006).

(4) Thus far, we have 2 potential manuscripts that will be submitted for publication in referred journal by the intern in collaboration with their mentors.

a. Lightbourn, Alrena V. Implementation of Behavioral Research Methods to Evaluate Psychosocial Factors Influencing the Decision for Prostate Cancer Screening among Black Men from Hillsborough County, Florida.

b. Harrison, Lakeitha V. EGCG Induced Cell Death in Prostate Cancer Cells.

(5). 1 paper has been accepted for presentation at the 2007 Society of Behavioral Medicine Annual Meeting, March 21-24th, 2007, Washington D.C.

Lightbourn, Alrena V Barriers and Motivations to Prostate Cancer Screening Among Black Men Residing in Hillsborough County, Florida.

(6) All 4 students who completed the internship have continued to engage in networking with accomplished prostate cancer researchers and leaders at MCC, and (Table 3)

(7) All 4 students have demonstrated interest in graduate study to continue their work with prostate cancer by applying to enroll in graduate studies. (Table 3)

As proposed, we are continuing to assist further progress of the class of 2006 to obtain placement in graduate programs or internships.

**Table 3: Current Status of Summer 2006 Interns;
FAMU Student Interns Mentors**

		Current Status, January 2007
Carrol, Jarrod A.	Cathy D. Meade Ph.D, R.N., F.A.A.N.,	Applying to 2 research fellowship programs: Emerging Infectious Diseases Fellowship Program & Public Health Summer Fellows Program (http://minorityhealth.org/p-student-public.html) This is a 8-week joint venture between Morehouse School of Medicine, Emory School of Public Health and the CDC
Harrison, Lakeitha V.	Dr. Srikumar Chellappan, Ph.D. and Dr. Nagi Kumar, Ph.D.	Graduate school for Pharmacology/Public health

Lightbourn, Alrena V.	Dr. Clement Gwede, Ph.D.	Florida A&M Doctoral student- Pharmacology/Toxicology
Oniyelu, Matilda M.	Paul Jacobsen, Ph.D. and Susan Vadaparampil, Ph.D.	Graduate school for Pharmacology/Public health Florida A&M, University of South Florida and Florida International University

We will continue to track Research Presentations/ student scientific presentations, papers, projects and refereed publications of students/mentors in collaboration. We will also determine the number of students who actually continue in a science field and progress through to a prostate cancer research career. We will continue to track students even after they leave our program to assess and assist with their career path. Each student will receive yearly updates about the program via an electronic newsletter. Additionally, all past participants will be invited to annual research celebration events to further share in their progress and success. In sum, we will use both quantitative and qualitative data to provide further evidence of Project INSPIRE 's positive effects.

There was a significant public interest in the program, which was widely covered by the media. (Appendix III).

V. Conclusions:

There continues to be a disproportionately high burden of prostate cancer incidence mortality and morbidity in African American men. In order to address the disparities of prostate cancer occurrence and survival among medically underserved minorities, we have designed the Project INSPIRE research-training program for FAMU undergraduate students. Theory and empirical evidence suggest that the development of a focused training program grounded in mentoring, collaboration and networking will assist in career development of aspiring scientists. Our mission at the Cancer Center is to create and perpetuate an environment that supports diversity and equity so that we may better serve our community in addressing their needs for cancer care and education. Thus, Project INSPIRE represents a strong response to an urgent need to achieve parity in the number of underserved cancer scientists in the training pipeline of prostate cancer research. The already established training and research collaboration between MCC and FAMU, coupled with the expanding research programs and resources of the Moffitt Cancer Center, will create an exciting synergy and environment that should make Project INSPIRE continue to thrive. The career trajectory of minority students and the research capacity of faculty and students at both institutions can be influenced significantly through this collaboration.

VI. References: None.

Appendix I
Presentations by Project INSPIRE
Summer 2006

Appendix I

Research Day

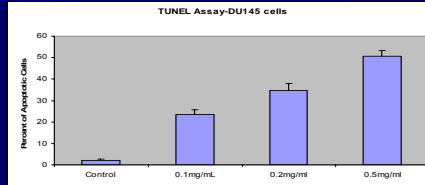
Presentations by Project

INSPIRE Interns Summer 2006

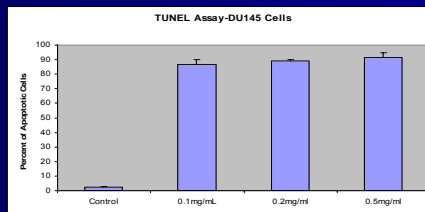
Methods

- TUNEL Assay
 - 24 & 96 hr. EGCG Treatment
- Western Blot Analysis
 - 24 hr. EGCG Treatment

DU145 TUNEL Assay

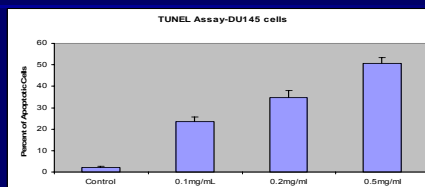


24 hr. Treatment

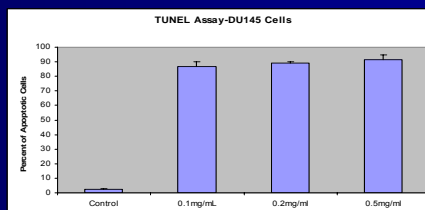


96 hr. Treatment

DU145 TUNEL Assay

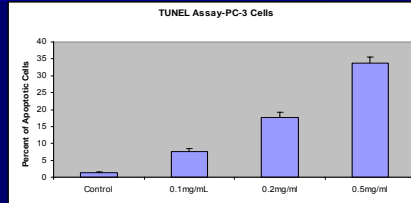


24 hr. Treatment

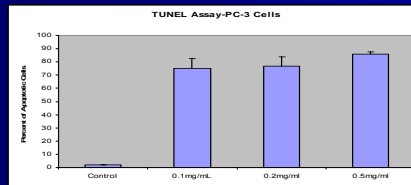


96 hr. Treatment

PC-3 TUNEL Assay

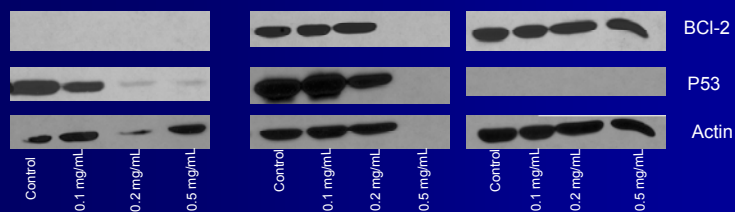


24 hr. Treatment



96 hr. Treatment

Western Blot Analysis



LNCaP

DU145

PC-3

Conclusion

- EGCG induces cell death in all three cell lines at varying degrees
- The greatest percentage of cell death was seen in DU145 cells
- The lowest percentage of cell death was seen in LNCaP cells

I Would Like to Say Thank You to:

- Florida A&M University, Dr. Nagi Kumar & all the members of Project INSPIRE
- Dr. Srikumar Chellappan, Wasia Rizwani, & the entire Chellappan Lab Group

For All The Help and Knowledge They You
Have Given Me Over This Summer

THANK YOU!

A Special Thanks Goes to:

The Frank E. Duckwall Foundation
The Saunders Foundation
The American Cancer Society
National Institutes of Health
Department of Defense

Impact of Leutenizing Hormone Releasing Hormone (LHRH) Agonists on Cognitive Function in Prostate Cancer

Presented by: Matilda Oniyelu

Project Inspire

July 31st , 2006

Principal Investigator: Paul B.Jacobsen, Ph.D.

Background and Significance

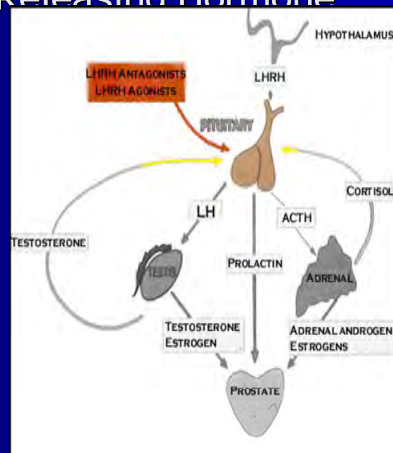
Prostate Cancer

- The most common cancer in U.S men especially among African American men
- Risk increases with age and is higher in some racial/ethnic groups and in men with positive family histories

Background and Significance

Leutenizing Hormone-Releasing Hormone

- LHRH agonists (also known as Gonadotropin releasing hormone) are used for treatment of prostate cancer
- LHRH agonist has several effects.
 - ↓ Testosterone
 - Hot Flashes
 - Fatigue
 - Cognitive changes?
 - Evidence from studies of healthy older men shows that lower levels of testosterone are associated with poorer cognitive functioning



Specific Aim

To determine whether men receiving LHRH agonist for treatment of prostate cancer demonstrate poorer cognitive functioning relative to men with no history of cancer matched for age, education, and geographic residence

Research Method

- 60 men with prostate cancer will be recruited from James A. Haley VA Hospital and H. Lee Moffitt Cancer Center & Research Institute
- 60 men without prostate cancer will be recruited from the community
- 60-90 minutes assessment measures on cognitive and health outcomes

Eligibility

- Patients:
 - Non-metastatic prostate cancer
 - Continuous LHRH treatment for at least six months
- Non-patients:
 - No history of cancer

Measures

Cognitive Performance

- Estimated Intellectual Ability: National Adult Reading Test (NART)
- Visual-Spatial Learning and Memory: Brief Visuospatial Memory Test – Revised (BVM-T-R)
- Verbal Learning and Memory: Hopkins Verbal Learning Test (HVLT)
- Verbal Ability: Controlled Oral Word Association Test (COWA)
- Visuomotor Speed: Symbol Digit Modalities Test
- Visual-Spatial Ability: Card Rotations Test

Measures

Health Outcomes

- Cognitive Complaints: Multiple Abilities Questionnaire (MAQ)
- Hot Flashes: Hot Flashes Questionnaire
- Fatigue: Fatigue Symptom Inventory (FSI)
- Sleep Quality: Pittsburgh Sleep Quality Index (PSQI)
- Depressive Symptomatology: Center for Epidemiological Studies – Depression Scale (CES-D)
- Quality of Life: Acute (past week) MOS 36 Short Form (SF-36)

Recruitment & Status N=120(60 per group)

- 41 patients and 3 non-patients agreed to participate since October 2005
- Data on 29 patient (24 from MCC & 5 from VA)
 - Mean age: 70(S.D. 9)
 - Racial Composition: 25 white, 4 black
 - Ethnicity: 29 non-Hispanic
 - Marital Status: 25 married, 2 widowed, 1 divorced and 1 never married
 - Income: 20 \geq \$40k , 9 < \$40k
 - Education: 20 \geq 13yrs, 9 \leq 12yrs

Future Plan

- Complete data collection
- Determine whether hypotheses are confirmed
- If hypotheses are confirmed, seek funding for larger longitudinal study
 - Patient will be assessed prior to starting LHRH therapy and followed for two years after first LHRH administration

Acknowledgement

- **Project Inspire grant**
 - Dr. Jacobsen
 - Dr. Nagi Kumar
 - Dr. Folake Odedina (FAMU)
 - Rowena Nash (FAMU)
 - Co- Interns
- **Funding : National Cancer Institute (5P20CA103676-03)**
- Lora Azzallero
- Maxine Thomas

Study Staff

- Margaret Booth-Jones, Ph.D.
- David Cellis
- Kristine Donovan, Ph.D.
- Rebekah Dunn, B.A.
- Andrea Elibero, B.S.
- Tim Estrella, B.A.
- Pia Francisco, M.P.H.
- Rebecca Green
- Sheri Jacobs, M.A.
- Katherine James
- Heather Jim, Ph.D.
- Amber Karlins
- Steve Kenske, B.A.
- Heidi King, M.A.
- Stephen Patterson, M.D.
- Raoul R. Salup, M.D.
- Ravi Shankar, M.D.
- Brent Small, Ph.D.
- Andrea Swan
- Crystal Wilson
- Babu Zachariah, M.D.

Sponsors

- This summer research opportunity was sponsored by:
 - The Frank E. Duckwall Foundation
 - The Saunders Foundation
 - The American Cancer Society
 - National Institutes of Health
 - Department of Defense

***An exploratory study to
evaluate and increase
prostate cancer education
and awareness among
African American men***

Jarrod A. Carrol
Project INSPIRE
Cathy Meade, Ph.D., RN, FAAN



Summer Objectives

■ To Gain....

- awareness about previous studies concerning prostate cancer and African American men
- knowledge about cancer and health disparities
- “hands-on” experience in addressing health disparities by taking part in Community Education and Outreach Department events

■ To Develop....

- a project concerning prostate cancer and the African American community

Research Relevance

■ African Americans & Prostate Cancer

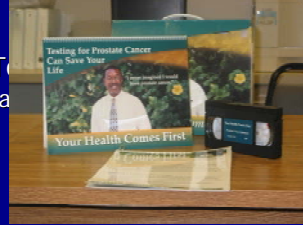
- 60% higher incidence rate
- Nearly two-fold higher mortality rate
- Factors impacting these disparities
- Cancer Education/Awareness /Interventions
 - Health Literacy
 - Community Health Fairs
 - Faith-based Organizations
 - Prostate Cancer Education Toolkit



Project Development

A. Evaluate Prostate Cancer Education Tools

- Video, brochures/pamphlets, flipcharts
 - Cultural acceptability
 - Attractiveness
 - Comprehension
 - Persuasion
 - Efficacy



B. Assess the feasibility of using barbershops as an educational venue

- Rationale
- Supporting national projects
- Duval County Health Department

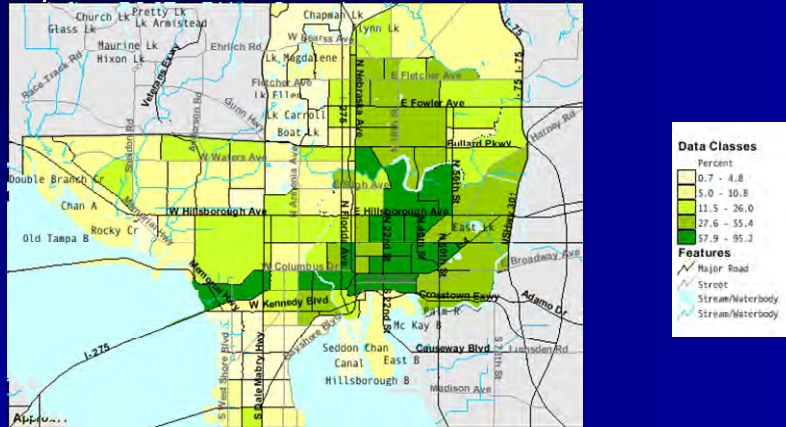


Project Timeline

- Stage 1
 - Project Proposal
 - IRB exemption application
- Stage 2
 - Sample and Recruitment
 - Florida Prostate Cancer Network (FPCN)
 - Local Barbershops
 - Procedure
 - Identify barbershops near African American communities - 2000 Census
 - Develop 3 surveys
 - Support Group Members, Barbers, Clients
 - Participant Observation
- Stage 3
 - Data Analysis
- Stage 4
 - Paper Submission
- Limitations
 - Time (Design vs. Implementation)
 - Familiarity with Tampa Bay Area

City of Tampa

Percent of people who are Black or African American Alone – 2000 census



The Overall Experience

- Approval process (IRB/SRC)
- Cancer Education Materials Development
- Community Health Fairs
- Tampa Bay Community Cancer Network (TBCCN)
- The Witness Project®



In Appreciation...

H. Lee Moffitt Cancer Center & Research Institute
Florida A&M University
Project INSPIRE
Florida Prostate Cancer Network (FPCN)
Local Barbershops
Dr. Nagi Kumar
Dr. Cathy Meade
Dina Martinez, M.A., MPH
LaShonda Coulbertson, MPH
Community Outreach and Education Department

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PERCEIVED BARRIERS TO PROSTATE CANCER SCREENING AMONG BLACK MEN

Presenter:

**Alrena V. Lightbourn
Florida A&M University
INSPIRE Program Intern**



Mentor:

**Dr. Clement Gwede
Cancer Control Division**



BACKGROUND

- Leading form of noncutaneous cancer in American males. An estimated total of **234,460 new prostate cancer cases (33%)** are expected in 2006.
- Third most prevalent cause of new cancer deaths expected in 2006 behind lung and colorectal cancer. About **27,350 (9%) of cancer deaths** will be attributed to prostate disease.



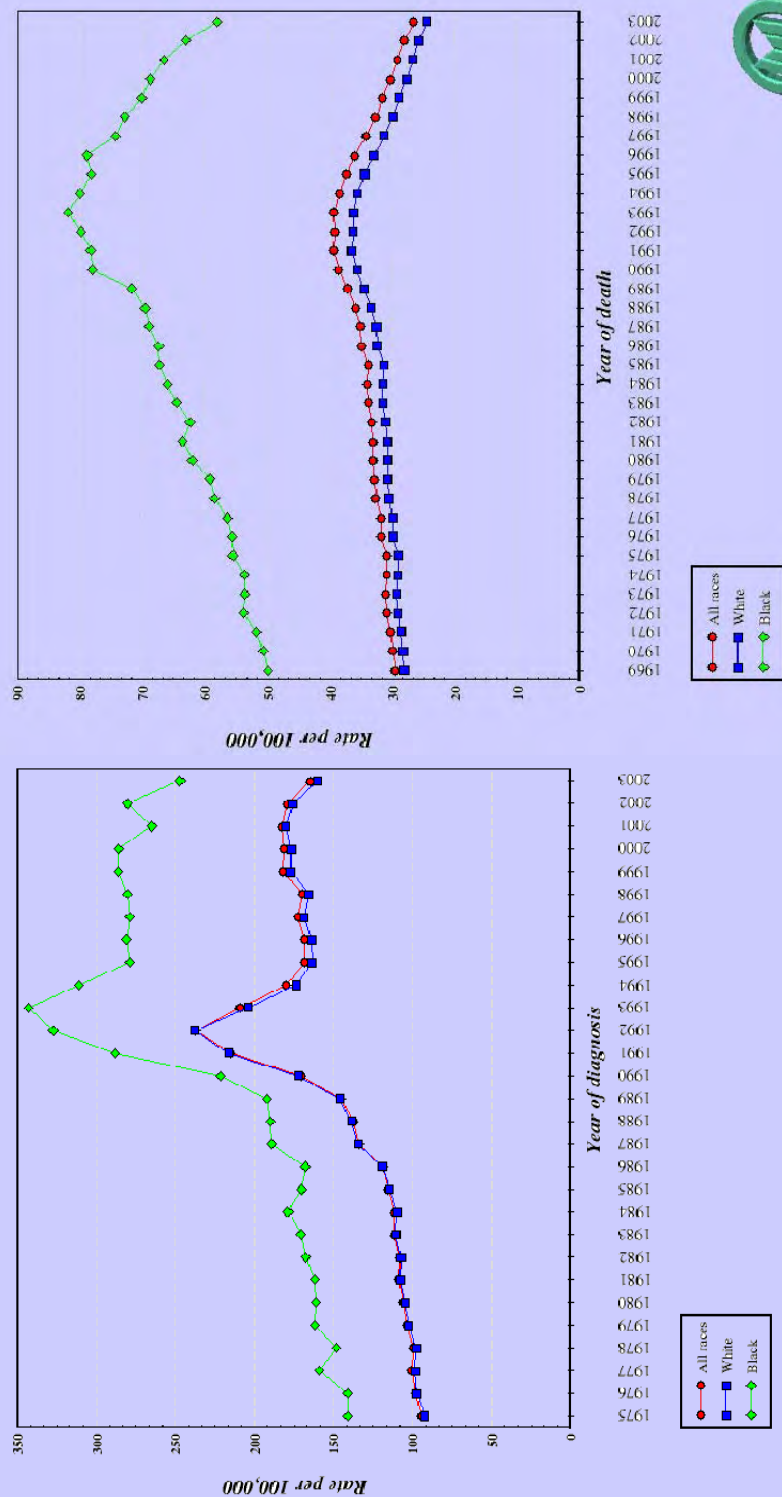
BACKGROUND

- African American men experience a **disproportionate burden of prostate disease.**
 - Higher Incidence (258.7 per 100,000):
 - 1.6x Whites;
 - 1.8x Hispanics;
 - 3.7x American Indian/Alaska Native;
 - 6.0x Asian/Pacific Islander (2000-2003)
 - Higher Mortality (64 per 100,000):
 - 2.4x Whites;
 - 2.9x Hispanics;
 - 3.5x American Indian/Alaska Native;
 - 5.7x Asian/Pacific Islander (2000-2003)

(National Cancer Institute, Surveillance, Epidemiology, and End Results (SEER), 2006)



U.S. Incidence & Mortality Rates for Prostate Cancer Between 1975 and 2003 (SEER, 2006)



BACKGROUND

- **Risk Factors:**
 - Advancing age; African-American ethnicity; positive family history; and diet. Others are suspected.
- **Screening for Prostate Cancer:**
 - Prostate cancer can be detected in early stages by the digital rectal examination (DRE) and the prostate-specific antigen (PSA) test.
- **Prostate cancer screening remains controversial:**
 - Limitations of PSA and DRE tests;
 - No definitive evidence that screening prolongs survival;
 - Some professional organizations do not recommend routine screening of asymptomatic men.



BACKGROUND

- African American men experience a **disproportionate burden of prostate disease.**
 - Higher Incidence (258.7 per 100,000):
 - 1.6x Whites;
 - 1.8x Hispanics;
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 - 5.7x Asian/Pacific Islander (2000-2003)

(National Cancer Institute, Surveillance, Epidemiology, and End Results (SEER), 2006)



American Cancer Society Prostate Cancer Screening Recommendations (ACS, 2006)

The prostate-specific antigen (PSA) test and the digital rectal examination (DRE) should be offered **annually, starting at age 50 years**, for men who have a **life expectancy of at least 10 more years**, and that discussion take place about the potential benefits, limitations, and harms associated with testing.

- ✓ In men for whom DRE is an obstacle to testing, PSA alone is an acceptable alternative.
- ✓ Men at high risk, including men of **sub-Saharan African descent and men with a first-degree relative** diagnosed before at a younger age (i.e., **<65 years**) should **begin testing at age 45 years**.
- ✓ Men at even higher risk of prostate cancer due to **more than one first-degree relative diagnosed** with prostate cancer before age **65 years** could **begin testing at age 40 years**.



PURPOSE

- Current scientific literature is sparse (Meyers et al., 1999; Weinrich et al., 2000) regarding self-reported reasons for or against testing for prostate cancer.
- The current investigation explored self-reported reasons for not getting tested (barriers) and getting tested (motivations) for prostate cancer screening among Black men from Hillsborough County.



METHODS

- **Study Design & Participants:** Secondary analysis of 2000 survey data collected from men residing in historically Black (Hillsborough County) neighborhoods with greater than 50% Black population.
- **Selection:** 334 asymptomatic, self-identified Black or African American men; ≥ 40 years old.
- **Data Analysis:** Descriptive statistics, correlation, and multivariate analyses of self-reported data to identify barriers and associations with screening behavior; p-value set at < 0.05 .





RESULTS

Table 1. Selected Demographic Characteristics & Screening Behaviors (N=334)

Variables	Frequency	Percent
	Response = "Yes"	
Age (average = 55.1 yrs; N=334)		
Age Group 1: <50 yrs (mean = 44.7)	141	42%
Age Group 2: 50 to 64 yrs (mean = 56.6)	120	36%
Age Group 3: 65 yrs and older (mean = 72.7)	73	22%
Education: high school or lower	247	74%
Regularly see doctor/healthcare provider for any health problem	245	73%
Employed within past year (self-, fulltime, part-time)	186	56%
Health insurance: Private/Government	285	85%
Marital status: married/living with someone	175	52%
Family/close friends had any type of cancer	172	52%
Gross household income	131	39%
Ever had a DRE test	219	66%
Ever had a PSA test	87	26%
Ever had either a DRE or PSA test	235	70%
Ever had both a DRE and a PSA test	71	21%

RESULTS

Table 2. Most Frequent Self-Reported Reasons for Not Getting Tested (Barriers)

<i>There are many reasons why some men don't get tested for prostate cancer. What are some reasons that prevented you from getting prostate cancer tests in the past? (Q. F9)</i>	Frequency	Percent
	Response = "Yes"	
Didn't know I should have it done	135	40%
I haven't had any problems	130	39%
I just haven't had time to get tested	47	14%
My doctor(s) did not recommend the tests	43	13%
My mind was not made up	39	12%



RESULTS

Table 3. Most Frequent Self-Reported Reasons (Motivations) for Getting Either a DRE or PSA Test

<i>The last time you got tested for prostate cancer, what made you get tested? (Q. B12)</i>	Frequency	Percent
	Response = “Yes”	
I had a regular doctor's appointment	76	23%
My doctor recommended it	50	15%
To detect prostate cancer early	26	8%
I noticed symptoms	18	6%
Because of my age	18	5%



RESULTS

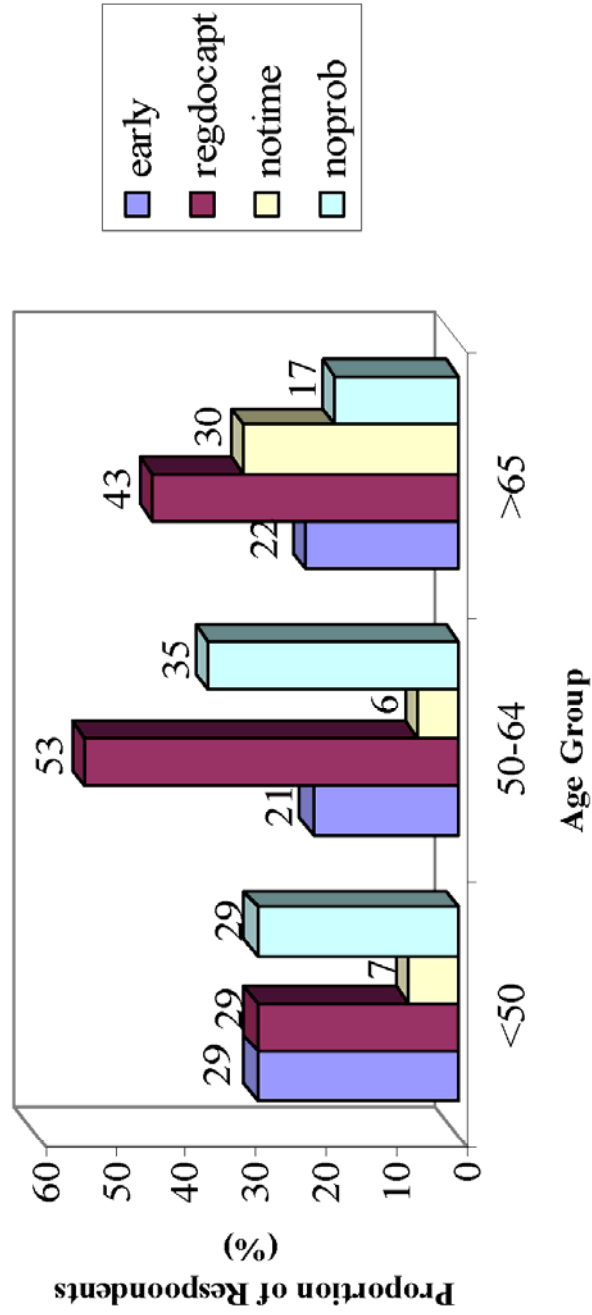
Table 4. Bivariate Analysis: Selected Factors Associated with Having Had DRE & PSA Tests

	Variables	DREandPSA	
		X ²	p-value
Demographics	Seeing doctor/other healthcare provider regularly	25.2	<0.0001
	Age Group (<50, 50-64, >65 years old)	19.0	<0.0001
	Having a high school education or lower	8.0	0.005
	Having a gross household income <\$20,000	7.3	0.007
	Having been employed with the last year	6.6	0.01
	Being married or living with someone	5.6	0.02
	Having family or close friends who had cancer	5.0	0.03
	<i>Having government/private health insurance</i>	0.2	0.6
Barriers	I haven't had any problems	4.4	0.04
	<i>My mind was not made up</i>	1.9	0.2
	<i>Didn't know I should have it done</i>	0.2	0.6
	<i>My doctor(s) did not recommend the tests</i>	0.0	0.96
	<i>I just haven't had the time to get tested</i>	0.0	0.997
Motivations	Desire for early detection	27.3	<0.0001
	I had a regular doctor's appointment	25.5	<0.0001
	My doctor recommended it	15.1	0.0001
	Because of my age	6.1	0.01
	<i>I noticed symptoms</i>	0.5	0.5



RESULTS

**Self-Reported Reasons for Getting or Not Getting Both
DRE and PSA Tests**



RESULTS

Table 5. Multivariate Analysis: Factors Significantly Associated with Having Both DRE & PSA Tests ($p < 0.05$)

Independent Variables	Dependent Variables	
	DRE and PSA	
	Odds Ratio	95% CI
Model 2a: Demographics and Motivations		
<i>Demographic Variables</i>		
Older Age (continuous)	1.05	(1.0, 1.1)
Having family or close friends who had cancer	2.8	(1.3, 6.3)
Seeing a doctor/other healthcare provider regularly for any problem	5.9	(1.2, 28.6)
Having a total combined gross household income of <\$20,000	0.3	(0.1, 0.8)
<i>Motivation to Get Tested</i>		
I had a regular doctor's appointment	4.0	(1.8, 8.8)
Early detection	7.0	(2.0, 24.9)



DISCUSSION

1. **Demographics:**

- a) Older age, having a family member or friend who had cancer, and seeing a doctor regularly were positively associated with getting DRE and PSA tests.
- b) Whereas, lower household income (<\$20,000) was negatively associated with having DRE and PSA tests.

2. **Barriers:** No self-identified (perceived) barriers (reasons) were associated with having DRE and PSA tests in multivariate analysis.

3. **Motivations:** Regarding reasons for being tested with DRE and PSA, having a regular doctor's appointment and desire to find cancer early were positively associated with having a DRE and PSA test.

4. **Limitations:**

- a) Self reported screening behavior;
- b) No other ethnic comparison group;

5. **Strengths:**

- a) Population based study, community dwelling sample.
- b) Assessed both perceived motivations and barriers.



PUBLIC HEALTH IMPLICATIONS

1. There is potential for **interventions** with health care providers to increase informed decision-making.
2. **Potential community-based educational interventions:**
 - a) Black men can be encouraged/empowered to discuss prostate cancer screening at their general medical appointments.
 - b) Targeted educational interventions for men of lower socioeconomic status are needed to emphasize the importance of early detection.





ACKNOWLEDGEMENTS

This summer research opportunity

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U.S. Department of Defense

I am also grateful

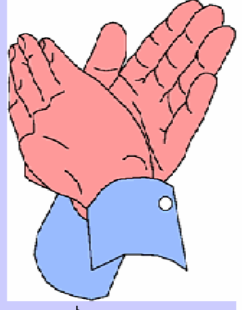
for support provided by:

Dr. Nagi Kumar, PI, INSPIRE Program, MRC

Dr. Clement Gwede, Mentor, MRC

Dr. Folakemi Odedina/Ms. Rowena Nash, FAMU

My Family and God



Appendix II
Research Papers of Project INSPIRE
Summer 2006

INSPIRE PROGRAM 2006

FINAL REPORT:

PERCEIVED BARRIERS TO PROSTATE CANCER SCREENING AMONG BLACK MEN RESIDING IN HILLSBOROUGH COUNTY, FLORIDA



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**PERCEIVED BARRIERS TO PROSTATE CANCER SCREENING
AMONG BLACK MEN RESIDING IN HILLSBOROUGH COUNTY, FLORIDA**

ABSTRACT

- Purpose:** To assess past prostate cancer screening among Black men and to determine which demographic, motivational, and inhibitory factors are associated with prostate cancer screening.
- Design:** Secondary analysis of cross-sectional survey data; stratified, random sampling.
- Instrument:** Face-to-face, door-to-door, interviewer-administered questionnaire.
- Setting:** 16 Block groups from predominantly/historically Black (>50% Black population) neighborhoods within Hillsborough County, Tampa, Florida, United States of America.
- Sample:** 334 self-identified Black or African American men who were at least 40 years old.
- Question:** What perceived (self-reported) barriers and motivating factors are associated with prostate cancer screening decisions by African American men?
- Method:** Descriptive, correlational, and multivariate statistical analysis of continuous and categorical data to establish associations.
- Dependent Variable:** Prostate cancer screening by DRE and PSA testing.
- Findings:** Certain *demographic* (older age – odds ratio[OR]=1.05, 95%confidence interval [CI]=1.0-1.1; having family or close friends who had cancer – OR=2.8, 95% CI=1.3-6.3), *healthcare access* (seeing a doctor or healthcare provider regularly from any health problem – OR=5.9, 95%CI=1.2-28.6; having a total combined gross household income <\$20,000 – OR=0.3, 95% CI=0.1-0.8), and *motivational factors* (having a regular doctor's appointment – OR=4.0, 95% CI=1.8-8.8; desire for early detection – OR=7.0, 95% CI=2.0-24.9) but *no self-identified barriers* (absence of any problems; mind not made up; didn't know to have tests done; doctor did not recommend it; no time) were strongly associated with DRE and PSA screening among Black men.
- Conclusions:** No self-reported barriers were identified in multivariate analysis, but desire for early detection and seeing a doctor regularly were identified as motivating factors for having DRE and PSA tests. In addition, older age, having family or close friends who had cancer, seeing a doctor or healthcare provider regularly for any problem, having a total combined gross household income <\$20,000 were also positively associated with getting tested.
- Implications:** There is significant opportunity for clinical and community-based interventions to increase informed decision-making.

INTRODUCTION

Epidemiology of Prostate Cancer

Prostate cancer is an enigmatic, malignant neoplasm that localizes in the glands of the peripheral zone initially but may spread to other parts of the body, such as bone¹. As prostate cancer is a very slow-growing cancer, the condition worsens with advancing age. Generally, men typically do not begin to experience symptoms until they are about 50 years old². Symptoms commonly experienced by men with advanced prostate disease include inability to urinate, blood in urine or semen, and pain or difficulty achieving erection³. However, there are typically no symptoms associated with early stages of prostate cancer⁴.

Across the Americas, prostate cancer is the leading form of noncutaneous cancer in all males. An estimated total of 234,460 newly diagnosed cases (33%) are expected in 2006 in the U.S. Behind lung and colorectal cancer, prostate cancer is the third most prevalent (27,350 cases or 9%) cause of new cancer deaths^{5,6,7,8}. From these data, it is evident that many more men get cancer than die from the disease. Men are more likely to die of other chronic diseases that may be present along with prostate cancer.

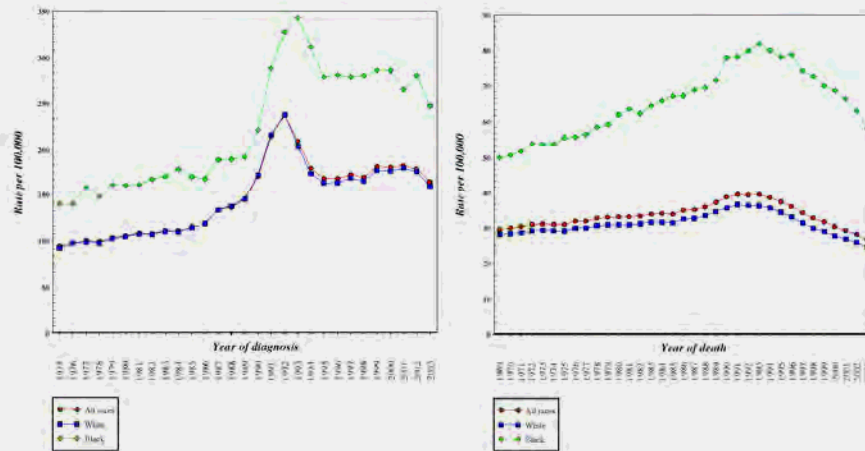
Men in the United States have the highest incidence (119.9 per 100,000) and 9th highest mortality of prostate cancer in the world compared with 19 other countries. The National Cancer Institute, Surveillance, Epidemiology, and End Results (SEER) data⁹ suggest that African American men experience a disproportionate burden of prostate disease. Among Black men, prostate cancer is the leading form of newly diagnosed, solid, noncutaneous cancers and the second leading cause of cancer deaths. Between 2000 and 2003, incidence and mortality rates of prostate cancer among Black men were 258.7 per 100,000 and 64 per 100,000 population, respectively. An estimated 41.8% incidence and 15.6% mortality were projected (for Black males) in 2005. Black men are 2-6 times more likely to be diagnosed with and die from prostate cancer than certain other racial or ethnic groups¹⁰:

- 1.6 times higher incidence and 2.4 times higher mortality than Whites;
- 1.8 times higher incidence and 2.9 times higher mortality than Hispanics;
- 3.7 times higher incidence and 3.5 times higher mortality than American Indian/Alaska Natives;
- 6.0 times higher incidence and 5.7 times higher mortality than Asian/Pacific Islander.

U.S. incidence and mortality rates¹¹ (Figure 1) for prostate cancer spanning from 1975 to 2003 reveal a 28-year trend of sustained elevated numbers of new cases and deaths from prostate cancer among Black men. Compared to epidemiological data for White men over the same period, the reported trends underscore a persistent, staggering, disparate burden of morbidity and mortality for Black men^{11,12}.

Factors that increase a man's chance of developing prostate cancer, or risk factors^{13,14}, include: advancing age; African-American ethnicity; positive family history; and diet. Other factors, such as environmental factors, are suspected¹⁵.

Figure 1. US Incidence and Mortality Rates for Prostate Cancer (1975-2003)



Screening Guidelines for the Early Detection of Prostate Cancer in Asymptomatic People¹⁶

Screening has been shown to decrease the number of deaths associated with certain forms of cancer¹⁷ and may potentially increase survivorship of prostate cancer patients¹⁸. Approximately 55.6% of African American men aged 50 and higher submitted to prostate screening in 2003. In 2004, 61.2% of Floridian men aged 50 and older had recently tested for prostate cancer.

Prostate cancer can be detected in early stages by digital rectal examination (DRE) and prostate-specific antigen (PSA) tests¹⁹. The DRE is a procedurally invasive technique and the older and less utilized of these two tests²⁰. Secretory (luminal) and neuroendocrine cells of the human prostate acini and ducts secrete PSA, a phenotypic marker for prostate disease²¹. The physiological range for PSA levels in the body is 4.0 nanograms per milliliter of blood (ng/ml), although some asymptomatic men may have normally higher levels infrequently. In a study conducted by Cheng and associates²², PSA levels among African Americans (n=349) averaged 1.46 ng/mL compared with levels found in Singapore-Chinese (1.43 ng/mL), US Whites (1.28 ng/ml), Japanese-Americans (1.22 ng/mL), and Latinos (1.18 ng/ml).

Although the risks and benefits of PSA screening are unclear²³, the use of PSA testing has substantially increased since its introduction in 1986^{24,25}. Jemal and associates²⁶ report that “the 5-year relative survival rate for prostate cancer increased significantly from 70% in the mid-1970s to 99% between 1995-2000, the largest absolute increase (29%) reported for any cancer. These improved survival rates may be an indirect effect of screening that precipitated treatment for early-stage prostate disease.

There is ongoing controversy over prostate cancer screening, to the extent that advice for testing varies significantly based upon the professional organization making the recommendation^{27,28,29,30,31,32}. Prostate cancer screening remains controversial, in part, due to limitations of PSA and DRE tests and absence of definitive evidence that demonstrates that screening effectively prolongs survival. DRE and PSA tests are valuable tools in the early detection of prostate cancer. However, ongoing clinical investigations have not yet determined the ability of these tests to alter the natural course of the disease or disease outcomes. Some professional organizations do not recommend routine screening of asymptomatic men. However, consistent with ACS recommendations, the Centers for Disease Control (CDC) also recommends that men participate in a consultation with their doctors to learn of the risks and benefits of PSA testing and the American Urology Association recommends inclusion of both tests for routine prostate cancer screening.

Recent updates to the screening recommendations advocated by the American Cancer Society clearly articulate the need for screening as well as added patient protections through medical counseling. The current recommendations are:

- ✓ “The prostate-specific antigen (PSA) test and the digital rectal examination (DRE) should be offered annually, starting at age 50 years, for men who have a life expectancy of at least 10 more years, and that discussion take place about the potential benefits, limitations, and harms associated with testing.
- ✓ In men for whom DRE is an obstacle to testing, PSA alone is an acceptable alternative.
- ✓ Men at high risk, including men of sub-Saharan African descent and men with a first-degree relative diagnosed before at a younger age (i.e., <65 years) should begin testing at age 45 years.
- ✓ Men at even higher risk of prostate cancer due to more than one first-degree relative diagnosed with prostate cancer before age 65 years could begin testing at age 40 years.”

Few published reports have documented self-identified barriers experienced by African American or Black men where it comes to deciding to get prostate cancer screening^{33,34,35,36,37}. Some other studies have focused on motivations and barriers to ‘health seeking behavior in urban African American men’³⁸, barriers among African American men^{39,40}, as well as intention to submit to testing⁴¹. However, we have found no published population-based, community-dwelling studies addressing the influence of motivators and barriers on the decision for prostate cancer screening (defined as having both DRE and PSA tests) among African American men ≥40 years from historically Black neighborhoods in the open literature. Consequently, the current investigation undertakes this research question.

Study Development

Problem: Despite the alarming national incidence and mortality statistics on prostate cancer, it is well recognized that there is still a deficiency in participation in prostate cancer screening by Black men. Very limited information exists on the self-reported reasons either for or against getting tested for prostate cancer within this subpopulation. In general, the current scientific literature surrounding these issues is sparse^{36,42}. Therefore, my study explored both self-reported reasons for not getting tested (barriers) and motivations for getting tested.

Research Question: What are the perceived (self-reported) barriers and motivating factors associated with prostate cancer screening decision in African American men?

Objectives: To accomplish this task, we identified pertinent dependent and independent variables known or suspected to influence prostate cancer screening. We created a composite dependent variable called 'DREandPSA' that conservatively reflected individuals who had both DRE and PSA testing, consistent with the 2006 American Cancer Society prostate cancer screening guidelines. Independent variables included in the study were: demographics, perceived barriers, and motivations. Age group served as the controlled variable for the studies. Behaviors potentially associated with deciding to undergo prostate cancer screening tests were addressed via questions about the respondent's past screening behavior. Our specific objectives were: (1) to identify perceived barriers; (2) to identify the motivating factors; and (3) to assess the relationship(s) between demographic factors and perceived barriers with screening behavior; and (4) to assess the relationship(s) between demographic factors and motivations with screening behavior.

Expected Outcome: The clinical outcome of interest is an increase in prostate cancer screening. Insight into factors influencing the decision for getting or not getting tested for prostate cancer will better inform outreach strategies aimed at increasing the rate of prostate cancer screening among American Black men. Timely, targeted clinical and community-based interventions could lead to a reduction of prostate cancer in Black men.

MATERIALS AND METHODS

Recruitment/Study Population: Hillsborough County had the 6th largest population of African American residents of the 67 counties in the state of Florida in the year 2000. According to the 2000 US Census, Blacks or African Americans⁴³ constituted 15% (149,423) of the total population of Hillsborough County in Tampa. The US Census Bureau⁴⁴ defines 'Black' as "having origins in any of the Black race groups of Africa". The median age for this county was 35.1 years, with 66.3% of the individuals <45 years old, 21.7% between 45 and 64 years, and 12% aged 65 or older.

Three hundred and thirty four (334) Black males residing in predominantly Black (>50%) neighborhoods in Hillsborough County, Florida during the year 2000 participated in the study. The average age of the sample population was 55 years.

Eligibility (Selection) Criteria: In order to be included in the study, respondents had to be asymptomatic, self-identified Black or African American men aged ≥ 40 years old.

Study Design and Data Collection: We performed a secondary analysis of survey responses collected in the year 2000. Interviewers administered and recorded a detailed interview with each respondent. A stratified random sampling design was used to select the population block groups that would participate in the study. Interviewers pursued purposive, door-to-door sampling within the selected block groups.

Data Analysis: All statistical analyses were performed using Statistical Analysis Software (SAS®). Descriptive measures were used to identify most frequent self-reported reasons for screening decisions. The resultant subset of responses was subjected to correlation analysis to determine potential associations among independent and dependent variables under consideration. A hierarchical logistical regression procedure was next performed to identify the strongest associations between individual, categorical, independent variables relative to screening behavior. Variables with a statistically significant bivariate association with the dependent variable were included in a logistic regression model with 'DREandPSA' screening as the dependent variable. Statistical significance level was determined using an alpha level of <0.05 was applied to univariate, bivariate, and multivariate statistical analyses. Together these statistical analyses provided a robust mechanism through which to identify associations between barriers, motivations, and screening behavior.

Measured Variables: The questionnaire was designed to measure demographics, past screening behavior, self-reported (perceived) barriers to prostate cancer screening, and motivations for prostate cancer screening, among other variables. The questionnaire was developed by the investigators based on items from published literature and was pilot tested before general use. Variables used in this analysis included:

- ✓ Demographics:
 - Highest grade of school;
 - Total household income;
 - Marital status;
 - Any cancer in any family or close friends;
 - Any of your blood relatives (grandfather, father, brother, uncle, or son) ever had prostate cancer;
 - Employment status within the past year;
 - Country of birth.
- ✓ Healthcare Access Variables:
 - See doctor or healthcare provider on a regular basis for any health problem;
 - Type of health insurance you had for most of the past year.
- ✓ Reasons for Getting Tested (Motivations):
 - I noticed symptoms;
 - To detect prostate cancer early;

- Because of my age;
 - I had a regular doctor's appointment;
 - I had a follow-up appointment for my routine PC testing;
 - A family member or friend has had cancer;
 - My doctor recommended it;
 - Another healthcare person recommended it;
 - My wife or girlfriend recommended it;
 - Another family member or close friend recommended it;
 - I heard about it in the newspaper;
 - I heard about it on the radio;
 - I heard about it on television;
 - I learned about it at church;
 - Specific other reason made me get tested;
 - DRE ever;
 - PSA ever.
- ✓ Reasons for Not Getting Tested (Barriers):
- I haven't had any problems;
 - Didn't know I should have it done;
 - I just haven't had time;
 - Fear of finding out I have cancer;
 - I don't have medical insurance coverage;
 - My mind was not made up;
 - Afraid of pain and discomfort from tests;
 - No transportation;
 - Too embarrassed to get tested/macho attitude;
 - I don't trust doctors;
 - My doctor(s) did not recommend the tests;
 - Don't have a regular doctor;
 - Other specific reason why I don't get tested for prostate cancer.

Respondents were required to select from a prescribed list of reasons or specify why they elected to undergo screening the last time they were tested for prostate cancer. The survey question measuring reasons why some men do not get tested for prostate cancer was similarly structured. To identify perceived barriers, respondents selected the response category that best represented the conviction with which agreed or disagreed with survey question. Options included strongly agree, agree, neither agree nor disagree, disagree, and strongly disagree. Demographic questions were a combination of yes/no answers, best fit selections, and interviewee-specified responses.

Survey Method: Face-to-face surveys were preferred to increase access and numbers of willing, eligible participants; to ensure accurate conveyance and interpretation of survey questions; and to provide personal assurances of the protection of confidential health information.

RESULTS

Frequency Distributions

An abbreviated demographic profile of the study participants is provided in Table 1. In summary, our study population consisted mainly of men who had high school or lower education; saw a doctor regularly; were insured, married or living with someone, and whose total household income was below \$20,000. Two-thirds of the sample had taken the DRE test but only one fourth of them had taken the PSA test. We, therefore, constructed a dependent variable called 'DREandPSA' which combined these tests – consistent with American Cancer Society 2006 guidelines.

Only 21% of the sample population had ever had both DRE and PSA tests. Surprisingly, 40% were unaware that they should get testing; and 23% were tested on the basis of having a regular doctor's appointment. Older men were more likely to say they had no time to get testing. Older age, having a family member or friend who had cancer, and seeing a doctor regularly were positively associated with getting DRE and PSA tests; whereas, lower household income was negatively associated with having DRE and PSA tests.

Table 1. Selected Demographic Characteristics & Screening Behaviors (N=334)

Dependent Variables	Response = "Yes"	
	n (Frequency)	% (Percent)
Demographic Characteristics		
Age (average = 55.1 yrs; N=334)		
Age Group 1: <50 yrs (mean = 44.7)	141	42.2
Age Group 2: 50 to 64 yrs (mean = 56.6)	120	35.9
Age Group 3: 65 yrs and older (mean = 72.7)	73	21.9
Born in the USA	305	91.3
Education: high school or lower	247	74.0
Regularly see doctor/other healthcare provider for any health problem	245	73.4
Employed within past year (self-, fulltime, parttime)	186	55.7
Type of health insurance: Government/Private	285	85.3
Marital status: married/living with someone	175	52.4
Family/close friends had any type of cancer	172	51.5
Gross household income (<\$20,000)	131	39.2
Past Screening Behaviors		
Ever had a DRE test	219	65.6
Ever had a PSA test	87	26.1
Ever had both a DRE and a PSA test	71	21.3
Ever had either a DRE or PSA test	235	70.4

Self-reported barriers to prostate cancer screening are presented in Table 2. When asked what prevented them from getting prostate cancer tests, 40% of the men surveyed acknowledged that they did not know that they should have the tests done. The second most popular explanation given by 39% of the men was that the absence of health problems did not trigger them to get tested. These results highlight the need for more prostate cancer education.

Table 2. Most Frequent Self-Reported Reasons for Not Getting Tested (Barriers)

<i>There are many reasons why some men don't get tested for prostate cancer. What are some reasons that prevented you from getting prostate cancer tests in the past? (Q. F9)</i>	Frequency	Percent
	Response = "Yes"	
Didn't know I should have it done	135	40
I haven't had any problems	130	39
I just haven't had time to get tested	47	14
My doctor(s) did not recommend the tests	43	13
My mind was not made up	39	12

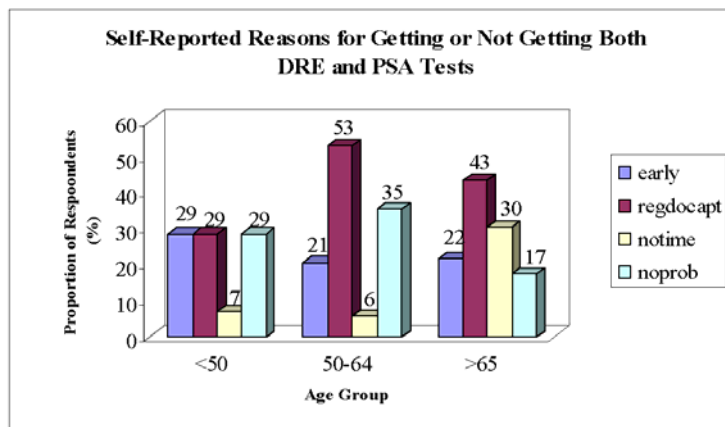
The motivating factors reported by men who received prostate cancer testing are recorded in Table 3. In contrast to persons who did not get screened, having a doctor's appointment and having a doctor recommend testing for prostate cancer were strong motivations for getting either the DRE or PSA test done. These results suggest an important role for healthcare providers and patient education.

Table 3. Most Frequent Self-Reported Reasons (Motivations) for Getting Either a DRE or PSA Test

<i>The last time you got tested for prostate cancer, what made you get tested? (Q. B12)</i>	Frequency	Percent
	Response = "Yes"	
I had a regular doctor's appointment	76	23
My doctor recommended it	50	15
To detect prostate cancer early	26	8
I noticed symptoms	18	6
Because of my age	18	5

In an early effort to detect emerging trends in the data, we charted the frequency distributions of 2 motivating factors and 2 barriers relative to age with 'DREandPSA' testing. Younger men were more likely to get screened because they wanted to catch prostate cancer early, whereas, older men were screened because they had regular doctor's appointments. Older men were more likely to say they had no time to get the tests.

Figure 2. Comparison of Trends for Getting or Not Getting Prostate Cancer Screening



Bivariate Analysis

Independent variables with high frequency distributions and high statistical significance ($p < 0.05$) were selected for additional analysis. Bivariate analysis of predominant factors identified several demographic and healthcare access factors, 1 self-reported barrier, and 4 motivations that were potentially associated with having had DRE and PSA tests. These factors were included in multivariate models.

Table 4. Bivariate Analysis: Selected Factors Associated with Having Had DRE & PSA Tests

	Variables	DREandPSA	
		X ²	p-value
Demographics	Seeing doctor/other healthcare provider regularly	25.2	<0.0001
	Age Group (<50, 50-64, >65 years old)	19.0	<0.0001
	Having a high school education or lower	8.0	0.005
	Having a gross household income <\$20,000	7.3	0.007
	Having been employed with the last year	6.6	0.01
	Being married or living with someone	5.6	0.02
	Having family or close friends who had cancer	5.0	0.03
	Having government/private health insurance	0.2	0.6
	I haven't had any problems	4.4	0.04
Barriers	My mind was not made up	1.9	0.2
	Didn't know I should have it done	0.2	0.6
	My doctor did not recommend it	0.0	0.96
	I just haven't had the time	0.0	0.997
Motivations	Desire for early detection	27.3	<0.0001
	I had a regular doctor's appointment	25.5	<0.0001
	I had a followup appointment for routine PC test	17.7	<0.0001
	My doctor recommended it	15.1	0.0001
	Because of my age	6.1	0.01
	I noticed symptoms	0.5	0.5

Multivariate Analysis

Next, independent variables (demographics, healthcare access, and motivations) and the combined testing dependent variable were entered into the regression model at the same time. Odds ratios (OR) and confidence intervals (CI) appear on the right. An OR of 1 signifies no significant difference; OR>1 means there's a positive association; OR<1 shows a negative association. The 95% CI assesses significance. Intervals that include 1 are not significant. For example, older age was positively associated with combined testing, but only marginally. Men who reported seeing a doctor on a regular basis were 5.9 times more likely to have had DRE and PSA tests than those who did not. On the other hand, people who had a total household income below \$20,000 were 70% less likely to have had DRE and PSA tests compared to men with higher income.

Table 5. Multivariate Analysis: Factors Positively Associated with Having Both DRE & PSA Tests (p<0.05)

Independent Variables	Dependent Variables	
	DREandPSA	
	Odds Ratio	95% CI
Model 2a: Demographics and Motivations		
<i>Demographic Variables</i>		
Older Age (continuous)	1.05	(1.0, 1.1)
Having family or close friends who had cancer	2.8	(1.3, 6.3)
Seeing doctor/other healthcare provider regularly for any problem	5.9	(1.2, 28.6)
Having a total combined gross household income <\$20,000	0.3	(0.1, 0.8)
<i>Motivation to Get Tested</i>		
I had a regular doctor's appointment	4.0	(1.8, 8.8)
Early detection	7.0	(2.0, 24.9)

No self-identified (perceived) barriers (reasons) were associated with having DRE and PSA tests in multivariate analysis. Based on our knowledge of the current data on this topic, we believe this to be the first time that both self-reported motivations and barriers have been assessed in a population-based study, community dwelling sample.

DISCUSSION

Demographics:

This study found that older age, having a family member or friend who had cancer, and seeing a doctor regularly were positively associated with getting DRE and PSA tests. In contrast, lower household income (<\$20,000) was negatively associated with having DRE and PSA tests.

Barriers:

No self-reported barriers associated with DRE and PSA testing survived the more rigorous multivariate analyses. No self-identified (perceived) barriers (reasons) were associated with having DRE and PSA tests in multivariate analysis.

Motivations:

Regarding reasons for being tested with DRE and PSA, having a regular doctor's appointment and desire to find cancer early were positively associated with having a DRE and PSA test.

Limitations:

All studies have limitations. Possible bias exists in this study because of self-reported screening behavior as well as the exclusion of other ethnic comparison group from the study. Self-reported studies run the risk of respondent acquiescence, reactivity, and response bias. However, the use of face-to-face interviewer-led questionnaires reduces the uncertainties associated with the survey instrument. In addition, the Black subpopulation was purposively targeted because of the enormity of the health disparities among Black men relative to prostate cancer.

Strengths:

The strength of this study lies in its design as a population based study, using a community dwelling sample. Based upon our knowledge of the current literature, our assessment of both perceived motivations and barriers to prostate cancer screening among Black men residing in Hillsborough County is unprecedented. These two aspects of screening have also not been previously assessed simultaneously in general population.

PUBLIC HEALTH IMPLICATIONS

The overall public health implications of these findings are that there is significant opportunity for intervention with clinicians as well as patients. There is potential for interventions with health care providers to increase informed decision-making. Potential community-based educational interventions include encouraging and/or empowering Black men to seek opportunities for screening and to discuss testing at their general medical appointments. Targeted educational interventions for men of lower socioeconomic status are needed to emphasize or reinforce the importance of early detection.

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**Title: An exploratory study to evaluate and increase prostate cancer education and awareness
among African American men**

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Project INSPIRE Intern**

Abstract

Studies have shown that the lack of Prostate cancer knowledge among African American men remains a preventive barrier to effectively addressing the cancer disparity[1]. It is hypothesized that the reason for the knowledge barrier is because the methods that are being used to convey the message are not culturally adaptive and as a result are not able to effectively inform and influence African American men. Previous methods have included attempting to reach the men through the African American church, a center of the African American community, and health fairs but male attendance at these events are not enough to effectuate substantial change in screening behavior and awareness. These observations suggest that access to the knowledge is a variable that should be considered when developing ways to increase awareness. This exploratory study is designed to fulfill two purposes: evaluate current prostate cancer educational materials in terms of cultural acceptability, attractiveness, comprehension, and persuasion that are geared toward an African American audience and to assess the feasibility of using barbershops as a gateway to inform African American men and increase prostate cancer education and awareness in the Tampa area.

I. Background/Significance

Project INSPIRE

Project INSPIRE is a collaborative effort between the H. Lee Moffitt Cancer Center and Florida A&M University (FAMU) and is designed to increase the number of minority scientists in the field of prostate cancer research. The premise behind Project INSPIRE is that in order to successfully eliminate racial and ethnic disparities in health,

the research workforce should be diverse with significant representation from the groups that are most affected. During the twelve-week duration at Moffitt Cancer Center, Project INSPIRE interns are to conduct a research project concerning a topic that involves Prostate cancer and its burdensome effect on African American community. At the completion of the experience, each intern is to present their research findings, provide implications for further research, and submit a final research report.

As the INSPIRE intern in the Community Outreach and Education Department, I have been given the unique opportunity to gain a perspective on health disparities, in general, and their effect on American health. More specifically, I have been able to focus my efforts on developing ways to address the current disparity that exists in prostate cancer. The overall objectives of this research experience are to increase my knowledge base of what is currently being done to address the disparity and to use knowledge gained from the experience to offer insights and recommendations to the cancer education and outreach department for reaching African American men in the Tampa Bay community.

Over the past month, I have had the opportunity to gain more 'hands-on' experience in addressing health disparities, by assisting to organize and execute projects developed by the department. In an effort to address the cancer disparity, the current health care system should work to develop better methods to convey the message of prostate cancer awareness and prevention. Given my observations, and as part of my summer internship requirements, I am interested in 1) evaluating the *Prostate Cancer Education Toolkit* that was developed by Dr. Cathy Meade among a group of African American cancer survivors at the Brother to Brother support group and 2) assess the feasibility of using barbershops in the Tampa Bay area as a gateway to inform and promote prostate cancer awareness among African American men.

Prostate Cancer & African American Men

I have reviewed various previous studies that confirm a higher incidence rate, higher mortality rate, and that prostate cancer is usually discovered in later stages among African American males. The American Cancer Society (ACS) reports that, as of 2005, the prostate cancer incidence rate is 271.1 per 100,000 for African American men, as

compared to 167.1 for white men. The ACS report further shows that the prostate cancer mortality rate among African American men is 70.4 per 100,000, as compared to 28.8 for white men. These verifiable conclusions, along with others, suggest that there are two different types of disparities that exist concerning prostate cancer: incidence and mortality. The first disparity deals with the behavioral and biological predispositions to getting prostate cancer. These include but are not limited to such factors as weight, diet, etc. The second disparity concerns the aggressiveness, stage of diagnosis, and the quality of care delivered to the patients. Both disparities support and influence the current efforts to increase cancer awareness and screenings for prostate cancer among African American men. Even though previous studies have shown that African Americans are more at risk of developing prostate cancer[2], screenings among African American males have not significantly increased. This situation brings up the question: If we know that African American men are at a higher risk then why aren't they getting tested in higher numbers? It is the existence and prevalence of preventive barriers such as the lack of knowledge and awareness that lead to later detection and inevitably a higher mortality rate among African American Men.

Cancer Education/Awareness/Intervention

There are various approaches that have been developed to address cancer health disparities. One approach considers increasing health literacy as a measure to lessen the unequal burden of cancer. This approach is founded on the premise that increasing knowledge, and therefore awareness, among the general population would lead to a decreased mortality rate because the cancers would be caught earlier when they are less aggressive and more treatable. The health literacy approach is intended to make sure that

the general population is able to read and use medical information, take medications, navigate through the healthcare system, understand and are informed of cancer awareness and preventive measures. Health literacy also utilizes cultural competency, making sure that all educational materials are culturally relevant, considering the target population. Dr. Meade has organized focus groups in order to gain community involvement in the development of effective educational tools[3]. One such educational piece that has been developed by Dr. Cathy Meade and colleagues is the *Prostate Cancer Educations Toolkit*. The toolbox consists of a video, flipcards, brochures/pamphlets and is designed to be used by community leaders to convey the message of awareness and prevention to their respective community.

In conducting literature reviews and searches I have identified recent publications, research papers etc. that provide a rationale and/or background for conducting this study. One such publication, *Improving Community capacity to develop cancer awareness programs*[4], is a case study that provides an overview of how a cancer education initiative was introduced in a Los Angeles community. The study includes a brief examination of previous awareness and screening efforts targeting medically underserved South Asians. Another publication,

Educating African-American men about Prostate Cancer: The Barbershop Program[5], is a case study that describes how an innovative, culturally-sensitive initiative was designed and implemented through an university-community partnership in Syracuse, New York. Furthermore, *Going to the Barbershop to fight Prostate Cancer*, is a national initiative, organized by The Prostate Net, which promotes disease risk education and Prostate cancer screening in barbershops throughout the country. The *Barbers Clipping Prostate Cancer Program* was designed and implemented by the Duval County Health Department in 2005 and its received benefits not only include having increased prostate

cancer education and awareness but also being able to consult with barbers about other community projects targeting African American men. Lastly, one study done in King County, Washington has assessed the feasibility using barbershops as a venue for prostate cancer education. It was determined that it would be feasible to work with barbershops for a community-based program of cancer screening decision-aid intervention for African American men[6].

Previous research has suggested that barbershops can be an innovative venue to reach, inform and impart cancer information to African American men but few programs exist in the Tampa Bay area. This exploratory initiative is designed in order to determine if educational initiatives, similar to those previously mentioned, can be implemented in the Tampa Bay area. I presented the idea of using barbershops at a recent Tampa Bay Community Cancer Network (TBCCN) partner meeting and it was well received. TBCCN is a collaborative effort between Moffitt Cancer Center, community-based health centers, social service agencies, faith-based groups, adult education and literacy groups, and local media. The network aims to address critical access, prevention, and control issues that impact medically underserved, low-literacy and low-income populations in the Tampa Bay area. The community partners were very receptive to the idea and are excited about the positive outcomes that could result from the initiative.

II . RESEARCH AIMS

- 1.) To explore and evaluate the *Prostate Cancer Education Toolkit* (pamphlets, brochures, flipcards, toolbox) among African American men in terms of cultural acceptability, attractiveness, comprehension, and persuasion.
- 2.) To assess the feasibility of using barbershops as a venue to promote prostate cancer awareness among African American men in the Tampa Bay Area.

III. METHODS

In the following section, the researcher will explain the proposed project plan to accomplish the specific aims.

A.) Aim 1 To explore and evaluate the *Prostate Cancer Education Toolkit* (pamphlets, brochures, flipcards, toolbox) among African American men in terms of cultural acceptability, attractiveness, comprehension, and persuasion.

1.) Sampling and Recruitment

Due to the duration and time limitation of the summer research program I will use a convenience, nonprobability sampling method. Participants will be recruited from the Florida Prostate Cancer Network's Brother to Brother Support Group. The Florida Prostate Cancer Network (FPCN) was established to advocate the prevention of prostate cancer deaths in Florida by supporting research, promoting legislation, and offering information on early detection, support organizations and current treatment options. FPCN has established the Brother to Brother support group for Prostate cancer patients, survivors and activists. I have received approval from the assistant executive director/group facilitator to come and gather their opinions about current education efforts and the feasibility of using barbershops. The Community Outreach and Education department at Moffitt Cancer Center has been working with FPCN in the area of increasing awareness and prevention in the Tampa Bay Area. The expected sample size at the support group is 10. The inclusion criteria will be men who: 1.) self-identify themselves as Black/African Americans; 2.) are 40 years of age or older; and 3.) have been diagnosed and/or treated for Prostate cancer.

2.) Procedure

Using the establish network relationship that the department has with Florida Prostate Cancer Network (FPCN), the researcher will be able to attend the monthly Brother to Brother support group meeting. The researcher plans to attend the monthly meeting and gain feedback from the members about the current educational materials and assess the feasibility of using barbershops as an educational venue to reach African American men. The researcher has spoken with Eudine Herbert, Assistant Executive Director at FPCN, and she has approved me being able to attend the monthly meeting and discuss my project with the group members. During one of the monthly meetings the researcher will begin with an open discussion using prompts about current educational materials and methods. Afterwhich, the researcher will show the

support group members in attendance the *Prostate Cancer Education Toolkit* and then have an open discussion and ask them to evaluate the components (video, flipcards, brochures/pamphlets) for effectiveness in terms of attractiveness, comprehension, self-efficacy, cultural acceptability, and persuasion. The members will also be asked to complete an anonymous brief survey to evaluate the materials that are used in prostate cancer education in terms of cultural acceptability, attractiveness, comprehension, and persuasion. In addition, the brief survey at the Brother to Brother support group will also include a few questions on the feasibility of using barbershops.

3.) Data Analysis

The researcher will take field notes of the open discussion and enter the data collected from the brief survey into excel. Information obtained from the brief survey will be coded and tabulated. Descriptive statistics will be performed on the data. The data will enable us to determine if the current Prostate Cancer Toolbox continues to be an acceptable way to relay educational messages of awareness and prevention and if the tools might be possible educational modalities for inclusion in barbershops. Also, the responses will verify the ongoing effectiveness of the toolbox components (video, flipcards, brochures/pamphlets) in terms of attractiveness, comprehension, self-efficacy, cultural acceptability, and persuasion.

B.) Aim 2 To assess the feasibility of using barbershops as a venue to promote prostate cancer awareness among African American men in the Tampa Bay Area.

1.) Sampling and Recruitment

Due to the duration and time limitation of the summer research program the researcher will use a convenience, nonprobability sampling method. Using the 2000 census tracking system, the researcher has identified areas in Tampa, within close proximity to USF, that are heavily populated by African Americans. The map is included in appendix E. With the area identified, the researcher has located 5 barbershops that fall within the parameters. The researcher will visit all of the barbershops and first speak with the barbershop's owners to ask them permission to visit the shop in hopes of gathering information from the barbers and clients. Once there, the researcher will administer two brief surveys (one designed for barbers, and the other designed for clients) that will quantitatively gauge their current state of awareness and assess the feasibility of using barbershops as a method to reach African American men. The expected sample size

is approximately 25 (5 barbers, 20 clients). The inclusion criteria will be men who: 1.) self-identify themselves as Black/African Americans; 2.) are 40 years of age or older.

2.) Procedure

Once the barbershops are identified (See next section Sampling and Recruitment for a description of the recruitment procedures), the researcher will visit the barbershop during regular business hours in order to ask for permission from the owner/manager if he can talk to some of the barbershop clients and ask them a few questions relating to prostate cancer education and awareness. Once granted approval, the researcher will begin an open discussion using question prompts (Appendix B). Afterwhich, barbers and clients will be asked to complete a brief survey that will gauge their impressions of the feasibility of using barbershops as a venue to reach and inform African American men about prostate cancer and screening. In addition, the brief survey will also include a few questions on general prostate cancer awareness. The researcher may have to complete the barber's survey verbally because the barber may choose not to stop cutting hair to complete the survey. While in the barbershop, the researcher will also conduct participant observation, which is an anthropologic approach to gathering information about individuals. Participant observation will be used to analyze the barbershop environment (e.g. waiting time, space, seating arrangements, etc.) to determine where educational material in the barbershop would be most effective.

3.) Data Analysis

The data collected from the brief survey will be analyzed as described in section (III.A.3). The results from the brief survey will determine if the barbers, clients, and support group members believe that using barbershops as an educational venue for African American men would be an effective approach to increasing awareness and prevention.

LIMITATIONS

There are certain limitations that are associated with this exploratory initiative. As this is designed to be executed during a 12-week internship at Moffitt, a major limiting factor is time. The majority of the time was spent in the planning and design of the initiative but this was done in order to assure reliable and valid results. The execution and data collection time was shorter than one week and is short in comparison but equally as important if the researcher hopes to accurately assess the current efforts and gain feedback on a new venue. The IRB/SRC approval process takes longer than the time allotted to complete the project. Therefore the majority of the researcher's time was spent designing a procedure that could later be

implemented. This all ties into the researcher's initial goal to lay the foundation for a sustainable project that can be carried out by the department. Another limiting factor would be familiarity with the environment in which the researcher will be working. As the researcher is not originally from the Tampa Bay area, the barbershops and locations are not familiar and may be cause for barbers not feeling comfortable enough to talk openly. The researcher doesn't see this as a major limiting factor but it must be considered.

IV. Conclusions & Future Directions

In summary, the results of this explorative initiative are expected to determine if the current prostate cancer education materials are effective in conveying the message of prostate cancer awareness and prevention. Furthermore, the results should also determine if it would be feasible to use barbershops in the Tampa Bay Area as a venue to reach and inform African American men about prostate cancer and health, in general. The researcher expects that that the results of the study will lead the department to regularly evaluate all current outreach and education methods and explore new ones when trying to reach different audiences.

If given more time the researcher would chose to continue on with the implementation of the barbershop initiative. After establishing the contact in the community, the educational piece in barbershops could be expanded to include information about diabetes, hypertension, heart disease, and other conditions that also effect the African American community. Furthermore, the researcher would work

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Appendix A

Brief Survey Questions ~ *Brother to Brother Prostate Cancer Support Group*

Interviewer: _____ Today's Date: _____

Good Evening I am Jarrod Carrol, an intern from the Cancer Education program at Moffitt Cancer Center. First, I would like to thank you for having me here. I have been working all summer to develop ways to increase awareness among African American men in the Tampa Bay area. I am here because I want to learn from you. Your ideas and opinions are important as I evaluate and help develop new educational materials and methods. I would like to know what you think about the current educational materials and efforts and also new methods to reach African American men. We want to know how we can best deliver the message of prevention and awareness.

Age: _____

Current Method Evaluation

Cultural Acceptability

- 1.) Overall, do you feel that the materials (teaching sheets, videotape, flipchart, brochures), would be helpful in conveying the message of prostate cancer prevention and awareness to African American men? Are there parts of the materials that bother you? Would these be materials that you would feel comfortable sharing with other men? Why?

Attractiveness

2.) *Overall, do you think that materials in the Prostate Cancer Education toolkit are ones that you would likely pick up to read and use if you saw them or had the chance to use them?*

☐ **Yes**

☐ **No**

Comprehension

3.) Do you feel that other African American men are able to understand the importance of awareness and prevention after going through the toolkit? Are there any parts/words that are hard to understand?

☐ **Yes**

☐ **No**

Comment:

Persuasion & Efficacy

4.) Do you feel that there is enough information in the toolbox to do what the message states, (early detection is important) If not, what else is needed?

☐ **Yes**

☐ **No**

Comment:

Venue Exploration

5.) Where, in the community, do you think Prostate cancer education material would be most effective in reaching African American men?

☐ Church

☐ Health fairs

☐ Clinics

☐ Sporting events: Which? _____

☐ Other: _____

6.) One place that we are thinking about placing information is barbershops. Do you feel that placing Prostate cancer educational materials in barbershops would be an effective way to connect with African American men? Do you think that the clients and barbers use the information to start conversations about health?

☐ **Yes**

☐ **No**

Comment:

Appendix B ~ *The Barbershop*
Open-ended Discussion Questions

Interviewer: _____

Today's Date: _____

Good afternoon I am Jarrod Carrol, an intern in the Cancer Education program at Moffitt Cancer Center. First, I would like to thank you for having me here. I am here because I want to learn from you. I would like to know what you know about prostate cancer. There are no right/wrong answers. Your ideas and opinions are important as I work to help develop new educational materials and methods to reach African American men. I am doing this because I want to know how we can best deliver the message of prevention and awareness.

- 1.) What do you know about prostate cancer?
- 2.) What do you think will be the best way to get the message of awareness and prevention out to African American men?

Appendix C

Brief Survey Questions~ *barbers at barbershops*

Age: _____

- 1.) Did you know that Prostate cancer is a high risk for black men – they are more likely to be diagnosed and die of prostate cancer than men from other ethnic groups?
☐ Yes
☐ No
- 2.) Are you aware that it is suggested that African American men get tested annually beginning at age 40?
☐ Yes
☐ No
- 3.) Are you aware that barbers have traditionally been known as influential members of the African American community?
☐ Yes
☐ No
- 4.) Where, in the community, do you think Prostate cancer education material would be most effective in reaching African American men?
☐ Church
☐ Health fairs
☐ Clinics

____ Sporting events: Which? _____
____ Other: _____

- 5.) If Prostate cancer information was available in your barbershop, do you
feel that it could be used to start conversations among your clients?

____ Yes
____ No

- 6.) Would you be willing to participate in a Prostate cancer education-training session so that you
could be more informed and then discuss with your clients the importance of getting screened?

____ Yes
____ No

Appendix D

Brief Survey Questions ~ Clients at barbershops

Age: _____

- 1.) Did you know that Prostate cancer is a high risk for black men – they are more likely to be
diagnosed and die of prostate cancer than men from other ethnic groups?

____ Yes
____ No

- 2.) Are you aware that it is suggested that African American men get tested annually beginning at age
40?

____ Yes
____ No

- 3.) Where, in the community, do you think Prostate cancer education material would be most
effective in reaching African American men?

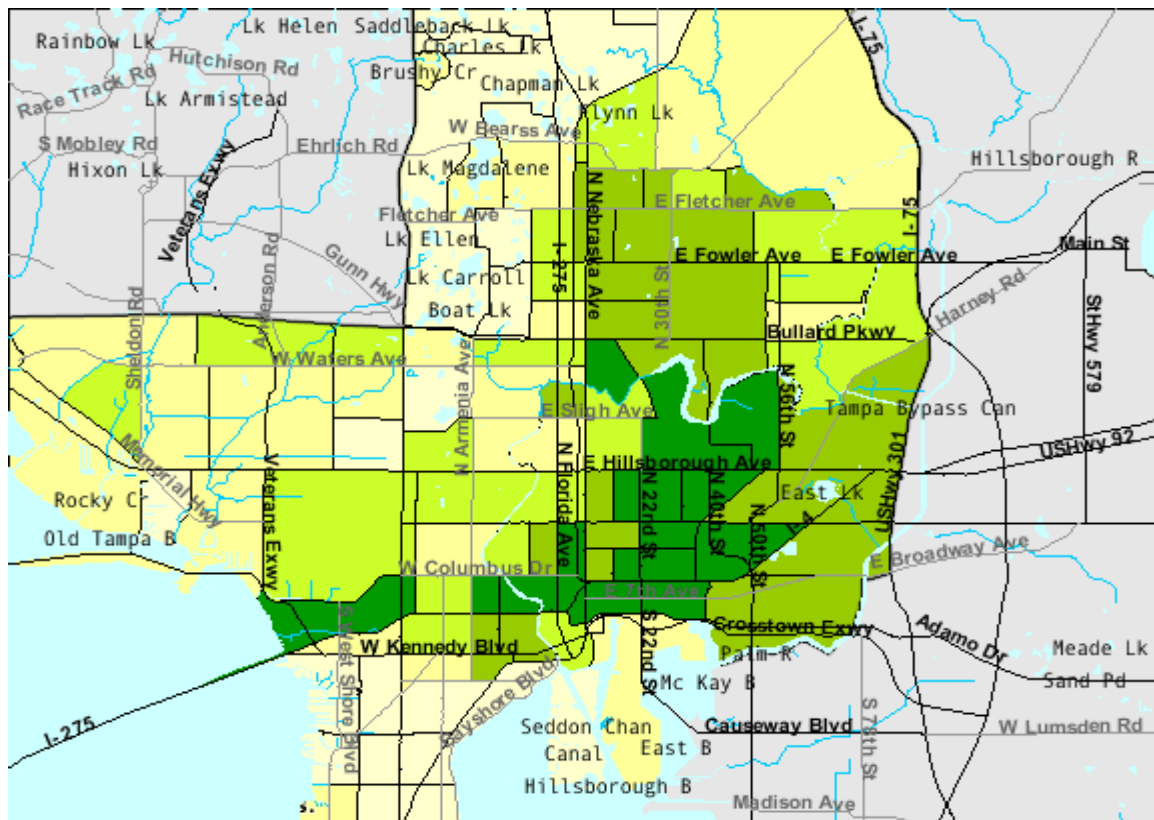
____ Church
____ Health fairs
____ Clinics
____ Sporting events: Which? _____
____ Other: _____

- 4.) If Prostate cancer information was available in your barbershop, do you
feel that it would be useful? Would you be comfortable getting information in this way?

☐ Yes
☐ No

Comment:

Appendix E
Census Tracking Map
Tampa American American population



Data Classes

Percent

0.7 - 4.8
5.0 - 10.8
11.5 - 26.0
27.6 - 55.4
57.9 - 95.2

Features

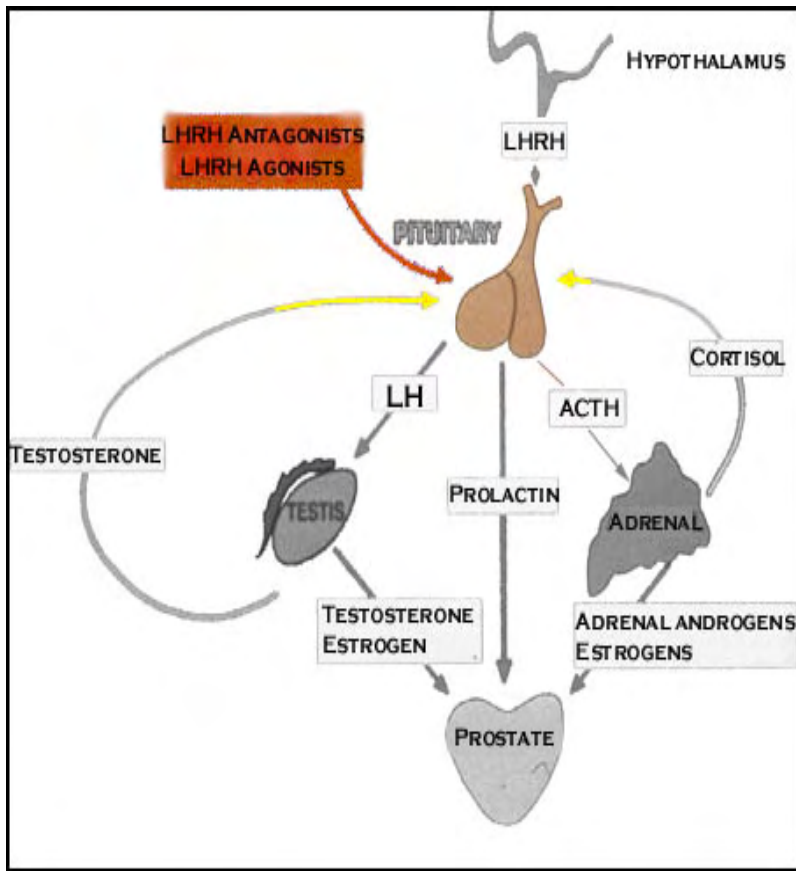
- Major Road
- Street
- Stream/Waterbody
- Stream/Waterbody

Impact of LHRH Agonists on Cognitive Function in Prostate Cancer, Matilda Oniyelu, Project Inspire.

Prostate cancer is the most common form of non-skin cancer in American men, especially African American men. Although risk factors for prostate cancer are not clearly understood, the disease is related to aging, as more than 70% of all cases occur in men over 65¹. Virtually all men diagnosed with prostate cancer this year can expect to live at least five years; thus, prostate cancer has become a chronic disease, thus, the effects of treatment on quality of life are important to survivors¹.

A common hormonal treatment for prostate cancer is injection of the LHRH agonists (e.g., Lupron, Zoladex). LHRH agonists are synthetic analogs of luteinizing hormone-releasing hormone, produced in the human hypothalamus, they bind with receptors in the pituitary gland that receive the normal LHRH². When a patient is first given the LHRH agonists injection, it stimulates the production of a second hormone known as *luteinizing hormone* (LH). Luteinizing hormone subsequently stimulates the production of testosterone in men. At this point, the patient's testosterone rises instead of falling for approximately two weeks. Due to this elevated level of testosterone, the normal LHRH in the body is shut down which means the body will produce low or no levels of testosterone. This low level of testosterone slows down the progression of the disease that causes prostate cancer. Thus, injection of LHRH agonists can be used to control the growth and spread of prostate cancer by largely shutting down the certain normal hormonal functions in men.

LHRH agonists are structurally similar to normal human LHRH; however, they are much more powerful than the normal form and have several side effects. These side effects include fatigue and hot flashes. In addition, evidence from studies of healthy older men show that lower levels of testosterone are associated with poorer cognitive functioning^{3,4}. Preliminary data from men with prostate cancer receiving LHRH agonists suggest that they may also experience decrements in cognitive functioning^{5,6}. However, further research is needed to document the association between LHRH agonist treatment and decrements in cognitive functioning.



-----Pathway of LHRH

agonists in the body.

The current study will use the cross-sectional, observational design to examine the relationship between LHRH treatment and cognitive functioning. Specifically, the current study will address 1) to determine whether men receiving LHRH for treatment of prostate cancer can demonstrate poorer cognitive functioning relative to men with no history of cancer matched for age, education, and geographic residence; and 2) to explore the relationship between cognitive functioning and other health outcomes (e.g. quality of life, fatigue, and hot flashes) in men receiving LHRH agonists for treatment of prostate cancer and men with no history of cancer matched for age, education and geographic residence. To address these aims, the current study will recruit a sample of 60 men receiving LHRH agonist therapy for treatment of prostate cancer and a matched comparison group of 60 men with no history of cancer. Both groups of men will be administered the same battery of neuropsychological tests that measure cognitive performance. Both groups

will also complete the same self-report measures assessing demographic characteristics, perceived difficulties with cognitive functioning, and other physical and psychosocial outcomes.

Methods

Participants

Patients

To be eligible, potential patient participants must: 1) be able to speak and read English; 2) have at least an eight grade education; 3) be diagnosed with nonmetastatic prostate cancer; 4) have been treated continuously for at least six months with either an LHRH agonist alone or combined anti-androgen /LHRH agonist therapy; 5) and be able to provide informed consent.

Nonpatients

To be eligible, potential nonpatient participants must: 1) be able to speak and read English; 2) have at least an eight-grade education; 3) be within five years of age of the patient to whom they are being matched; 4) be within the same school education level as the patient to whom they are being matched (i.e., partial high school or less, high school graduate, some college, college graduate, or graduate education); 5) reside within the same zip code as the patient to whom they are being matched ; 6) report no history of cancer (other than basal cell skin carcinoma); 7) have a mailing address and a working telephone number; 8) and be able to provide informed consent.

Procedure

Patient Participants

Potential patient participants will be identified using the information obtained from the computerized appointment system and the clinical staff at Moffitt Cancer Center (MCC) and the James A. Haley Veterans Administration Hospital (JAHVAH). Potential patient participants will be recruited in person during a regularly scheduled outpatient appointment with the physician who is coordinating their prostate cancer treatment. For many, if not most patients, this visit will be for an additional depot administration of an LHRH agonist. Recruitment will consist of a trained research assistant approaching patients to first verify its eligibility. Eligible patients will then be provided with an informed consent form

to review with the research assistant. Those patients who wish to participate will be asked to sign the consent form. A trained research assistant will administer the battery of cognitive performance tests and monitor completion of the self-report measures. This assessment is expected to take 60 minutes to complete. Upon completion of the assessment, participant will be paid \$75 for the time and effort required for participation.

Nonpatient Participants

Recruitment of non-patient participants will occur in tandem with the recruitment of patient participants. We will purchase name and contact information from MSG for males by zip code and age. For each patient, a list of 25 randomly selected males who reside in the same zip code as the patient and are within five years of the patient's age will be generated. A letter of invitation containing basic information about the study will be mailed to one person selected randomly from the list for each patient; a member of the team will attempt to contact the individual by telephone to determine his eligibility. If the individual meets all eligibility criteria, he will be invited to participate in the study. Upon completion of the assessment, each nonpatient participant will be paid \$75.

Measures

Cognitive Functioning

Estimated Intellectual Ability: National Adult Reading Test (NART) ⁷ contains 50 irregular words that cannot be easily decoded phonetically. Previous study shows that performance on NART is highly correlated with general intelligence (factor 'g') as measured by the Wechsler intelligence scales⁸.

Visual-Spatial Learning and Memory: This cognitive domain will be assessed using the Brief Visuospatial Memory Test – Revised (BVMT-R) ⁹. Respondents are presented with six geometric figures printed in a 2x3 array with three 10-sec learning trials, a delayed recall and a recognition trial

Verbal Learning and Memory: This domain will be assessed using the Hopkins Verbal Learning Test ¹⁰. Participants are given three trials to learn a list of 12 concrete nouns, (e.g., cave, horse, sapphire) plus a yes/no recognition task.

Verbal Ability: This domain will be assessed using the Controlled Oral Word Association Test¹¹. Three one-minute trials to produce different non-proper words beginning with C, F, and L, respectively.

Visuomotor Speed: This domain will be assessed using the Symbol Digit Modalities Test¹². A 90-second trial to code symbols to a key with different abstract symbols assigned to numbers, plus a memory trial.

Visual-Spatial Ability: This domain will be assessed using the 24-item Mental Rotation Test¹³. It is a three-minute trial to test ability to see differences in figures (same if comparison figure is rotated, different if it is flipped)

Health Status

Cognitive Complaints – The Multiple Abilities Questionnaire (MAQ)¹⁴ assesses subjective evaluation of cognitive function in routine daily activities.

Hot Flashes – Hot Flashes Questionnaire Methods similar to those used by Carpenter and colleagues¹⁵ in post-menopausal women treated for breast cancer.

Fatigue – Fatigue Symptom Inventory (FSI)¹⁶ is a 14-item scale to assess frequency, severity and disruptiveness of fatigue.

Sleep Quality – Pittsburgh Sleep Quality Index (PSQI)¹⁷ is a 19-item scale to designed to assess sleep pattern, quality and disturbances in the past month.

Depressive Symptomatology – Center for Epidemiological Studies – Depression Scale (CES-D)¹⁸ is a 20-item measure of depressive symptomatology

Quality of Life – Acute (past week) MOS 36 Short Form (SF-36) is a widely used self-report measure designed to assess perceived health and functioning¹⁹.

Preliminary Sample Characteristics

To date, 44 participants have been received; 41 patients and 3 non-patients. Preliminary data have analyzed from 29 participants and are presented here. Participants are within the mean age of 70(SD =9). A majority of the participants are white (86%), non-Hispanic (100%) and married ((86%). Sixty-nine percent are college graduates and 69% reported a household income of \$40,000 or more per annum.

Discussion

This pilot study is expected to provide preliminary result essential for designing a larger prospective longitudinal study that incorporates appropriate comparison groups and is aimed at further evaluating the impact of LHRH agonists on cognitive functioning in men with prostate cancer. If results confirm the prediction that cognitive functioning will be poorer in men receiving LHRH agonist therapy for treatment of prostate cancer, we will seek R01 funding to conduct a study in which men with prostate cancer are assessed on cognitive and hormonal measures before the start of LHRH agonist therapy and at a multiple time points thereafter.

Strength of the current study includes the comparison group of healthy men matched to patients on factors expected to influence cognitive function: age, education and geographic residence (a proxy for socioeconomic status). However, it should be noted that the current study also has a number of limitations.

Due to the cross-sectional, observational design, it should be noted that there are factors other than treatment with LHRH agonist that might be contributing to any observed group differences in cognitive functioning. For example, there might be a possibility that observed differences might be caused by other types of treatment (radiotherapy, surgery) the prostate cancer patient received. Information about these other types of treatment will be collected and analyzed them to check how these factors influence our findings.

These findings will offer pilot data necessary to plan well controlled longitudinal studies of the effects of LHRH therapy on prostate cancer.

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EGCG Induced Cell Death in Prostate Cancer Cells

Harrison, Lakeitha V.

Introduction

Asians have been drinking green tea for over 3000 years. It is a drink made from the leaves of the *Camellia sinensis* plant, a shrub native to Asia. Black tea is made from this plant also, but unlike green tea, it is made from leaves that have been fermented. (This has been linked to the reduction in levels of some of the antioxidants, in black tea.) Tea is the second most widely drank beverage in the world, next only to water. The incidence of progressive prostate cancer is 15-fold higher in U.S. men than it is in men from Asian countries (11). It has previously been shown that the consumption of green tea polyphenols inhibits prostate carcinogenesis in prostate cancer and suggested that induction of apoptosis in prostate cancer cells is responsible for these effects. Much of the chemopreventive effects of green tea are attributed to its major polyphenolic constituent (-) epigallocatechin-3-gallate (EGCG). While recent studies have shown that green tea and EGCG are capable of selectively inhibiting cell growth and inducing apoptosis in cancer cells without adversely affecting normal cells (2, 3, 4, and 8). It is now widely appreciated that agents capable of inducing apoptosis in cancer cells can potentially lead to the development of mechanism-based prevention and treatment approaches for cancer. Therefore, a complete understanding of the mechanism(s) of EGCG action is important for its development for cancer prevention and/or therapy (5).

Materials and Methods

Green tea contains chemicals known as polyphenols, which have antioxidant properties. Catechins are the major group of polyphenols in green tea. The most important catechin seems to be epigallocatechin-3-gallate (EGCG). EGCG may cause cancer cells to die like normal cells do. It may also work by stopping new blood vessels from forming, a process called angiogenesis, thereby cutting off the supply of blood to cancer cells (6).

In the present research three human prostate cancer cell lines were used in comparison to one another; PC-3, DU-145, and LNCaP cell lines were used. Once 80-90% confluent, each of the cell lines

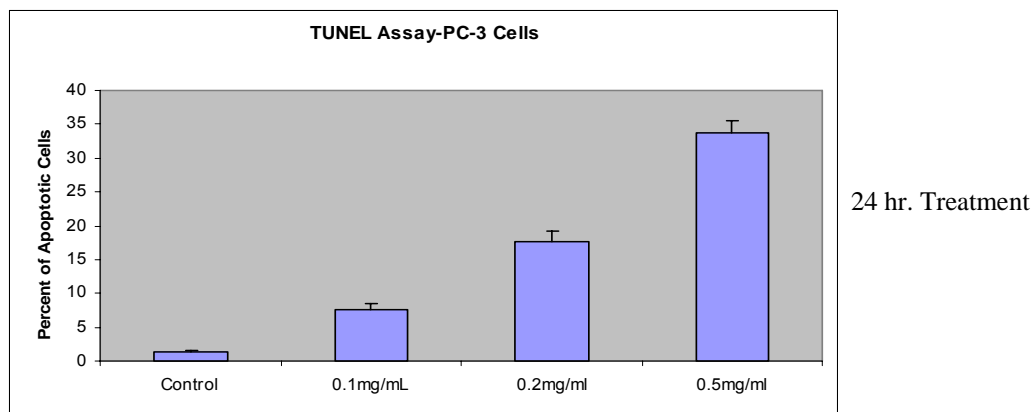
were treated with none or 0.1mg/mL, 0.2mg/mL, and 0.5mg/mL concentrations of green tea in 8mL of fresh media for 24 and 96 hours. Lysates were made after 24 hours of treatment for Western Blot Analysis and after 24 and 96 hours of treatment TUNEL Assay was performed to determine how much apoptosis had occurred in all of the cell lines.

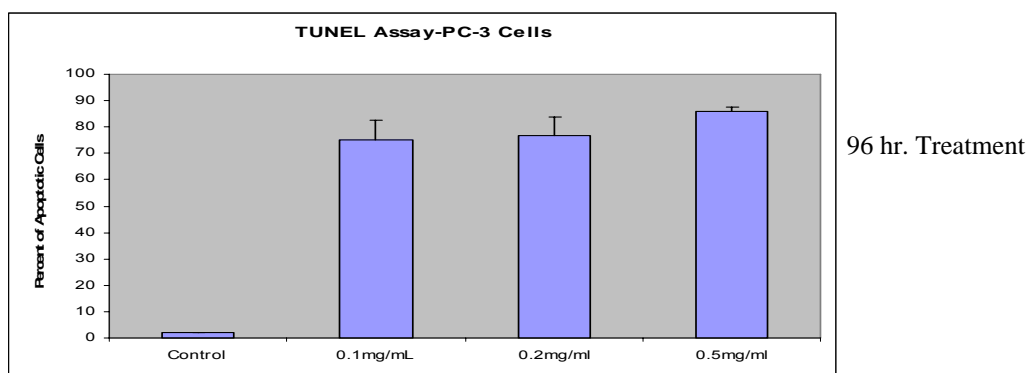
For immunoblotting of PC-3, DU-145, and LNCaP cell lines whole cell lysates were made using M2 lysis buffer containing freshly prepared protease inhibitors after 24 hours of treatment. Protein content was quantified by protein assay. Ten per cent polyacrylamide reducing SDS gels were run and electrotransferred onto nitrocellulose membrane. The blots were then blocked overnight in 5% milk and 0.1% Tween-20 in 1X PBS solution. The blots were then treated with primary and secondary antibodies for actin, p-53, and bcl-2 for 1 hour each. Between each step the blots were washed using a 0.1% Tween-20 in 1x PBS solution.

Results

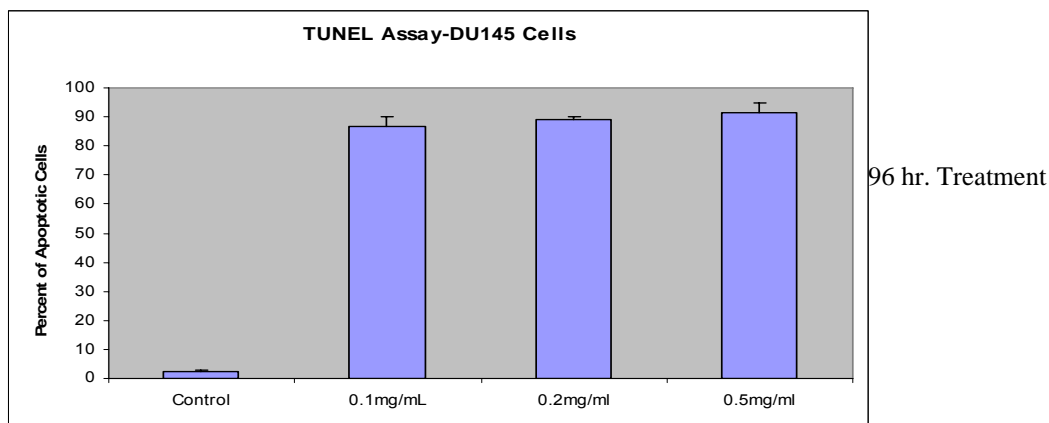
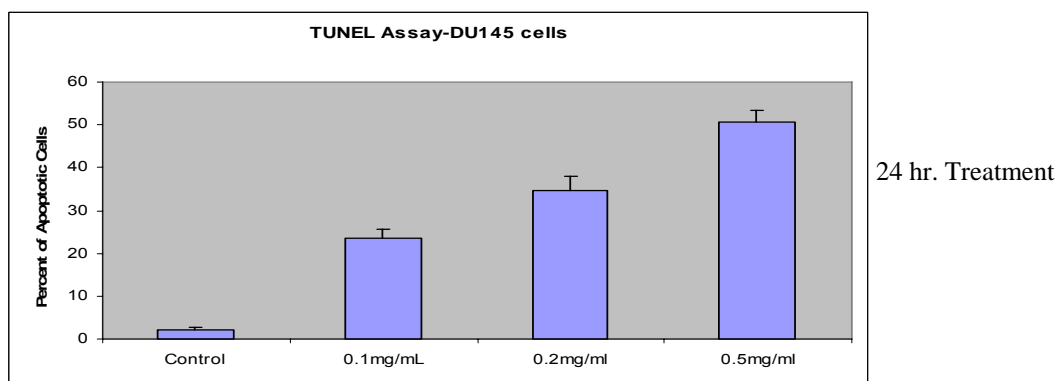
TUNEL Assay

To begin with, in the PC-3 cell line showed that at 24 hours as the concentration of EGCG got so did the percentage of cell death, so greater concentrations gave greater amounts of cell death in the cell line, but at 96 hours of treatment there was a stabilization of cell death at the lowest concentration of green tea used, which was 0.1mg/mL.

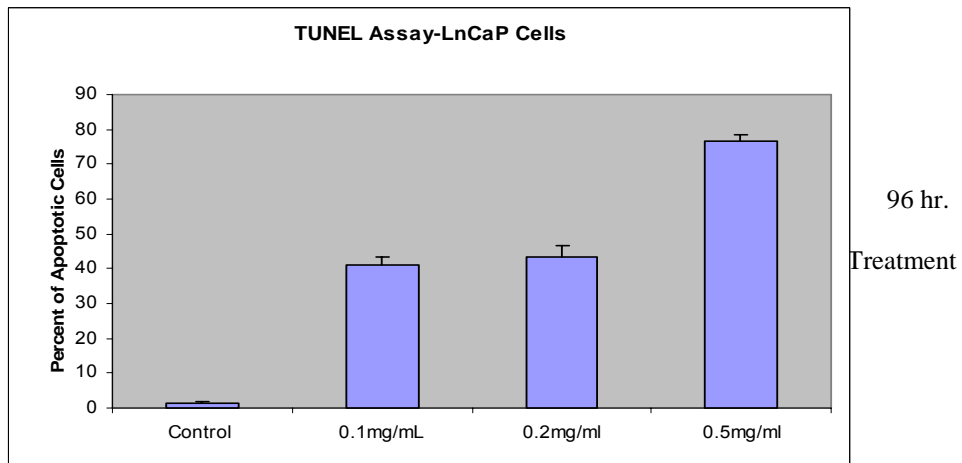
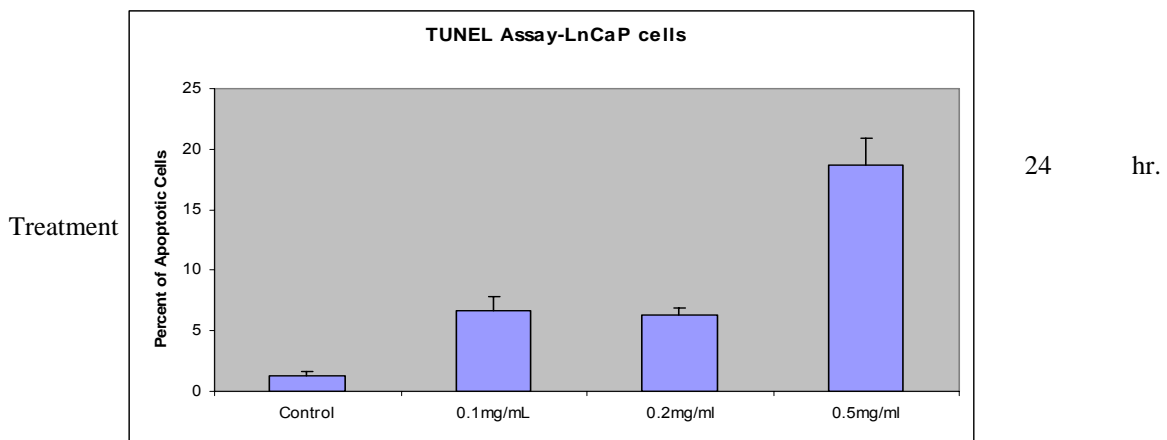




Furthermore, in the DU-145 cell line there was a similar pattern as in the PC-3 showing that after 24 hours of treatment as the concentrations rised so did the amount of cell death and after 96 hours of treatment there was a high peak reached in the amount cells dying after 0.1mg/mL of green tea.



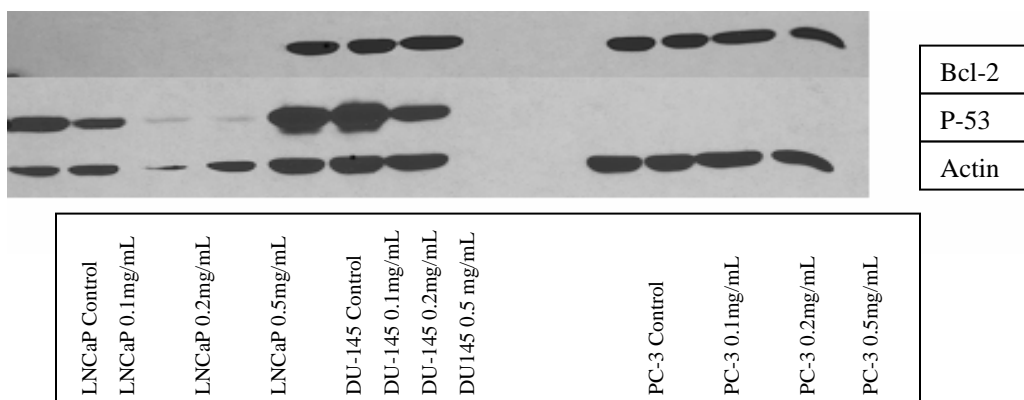
Moreover, in the last cell line, LNCaP, it was observed that like the other two cell lines at 24 hours of treatment a greater concentration of EGCG was needed to have a greater percentage of cell death. But unlike the other two cell lines after 96 hours of treatment it was seen that again just like the 24 hour treatment a higher concentration of EGCG was needed to have a greater amount of cell death.



Western Blot Analysis

In western blot analysis, it was shown that in PC-3 cells there were equal amounts of actin and bcl-2 proteins at all concentrations including the non-treated control. While the cell line did not show P-53 that is believed to have happened due to PC-3 being P-53 negative.

Additionally, DU-145 analysis showed equal amounts of actin and bcl-2, even as it seems that there was a down regulation of P-53 as the concentrations got higher. It must be said that the 0.5mg/mL concentration could not be properly performed due to a lack of protein after a great amount of cell death. Lastly, the LNCaP cells showed a down regulation in P-53 as concentrations rose and there was no bcl-2 seen in these cells.



Conclusion

In this study, the role of two important factors has been evaluated, P-53 and Bcl-2, and their effects due to green tea polyphenol EGCG against three prostate cancer cell lines (PC-3, DU-145, and LNCaP). P-53 considered as the “guardian of the genome”, is the most frequently altered tumor suppressor in human malignancies with more than 50% of solid tumors having a loss in of wild-type p53 expression due to deletion or point mutation, it also responsible for cell cycle arrest upon DNA damage and is also a key regulator of apoptosis (5). Although all these things are true in this study irrespective of P-53 status there were significant amounts of apoptosis in all three cell lines.

This study also shows that EGCG induces cell death at varying degrees in all of the three prostate cancer cell lines. Proving that apoptosis does occur in tumor causing cells the same way that it occurs in normal cells by TUNEL assay. A daily dose of 300mg EGCG in green tea capsules, stopped 90% of prostate cancer in high-risk men (6). It is known that EGCG can prevent or even promote cell death in

cancerous cells but the problem is no one knows what pathways EGCG uses to perform cell death and prevent cancer. So, if given more time I would try to find out exactly what proteins are being regulated and how the green tea polyphenol works so that maybe there could be further research to come up with a drug that acts in the same way as the EGCG.

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Appendix III
Press Coverage of Project INSPIRE
Summer 2006

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MOFFITT INSPIRES NEW GENERATION OF SCIENTISTS

Tampa, FL (June 22, 2006) – A group of college students is spending the summer at H. Lee Moffitt Cancer Center & Research Institute trying to help find a cure for a disease that's killing men in their community. Black men are more likely than white men to get prostate cancer. They are also more likely to die from the disease. Moffitt is hosting four undergraduates from Florida A&M University as part of the Project INSPIRE (Interest, Need, Stimulate, Persevere, Ideas, Relevance, Excellence) program.

"There is a critical need to inspire and increase the number of young scientists from underserved groups and create a cadre of culturally sensitive, well-trained scientists," says Nagi Kumar, Ph.D., director of nutrition at Moffitt Cancer Center and coordinator of the INSPIRE program. "Hopefully, they'll improve research and ultimately contribute to reducing this disproportionate burden of prostate cancer incidence and mortality in African-American men.

Students from the historically black university are working alongside scientists in this hands-on research program. They're participating in biomedical, clinical and population sciences research. Kumar expects the students to conduct original studies on prostate cancer, present scholarly papers and publish their work along with their mentors. The ultimate goal is to attract these young scientists to careers in prostate cancer research.

In 2001, H. Lee Moffitt Cancer Center & Research Institute earned NCI Comprehensive Cancer Center status in recognition of its excellence in research and contributions to clinical trials, prevention and cancer control. Additionally, Moffitt is a member of the National Comprehensive Cancer Network, a prestigious alliance of the country's leading cancer centers, and is listed in U.S. News & World Report as one of America's Best Hospitals for cancer. Moffitt's sole mission is to contribute to the prevention and cure of cancer.

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[FAMU students find hope at Moffitt](#)

St. Petersburg Times – August 11, 2006

[Moffitt hosts four Florida undergrads to find prostate cancer cure under INSPIRE project](#)

This appeared in many publications including:

Pharma Investments, Ventures & Law Weekly – July 30, 2006

Cancer Law Weekly – July 29, 2006

Obesity, Fitness & Wellness Week – July 29, 2006

Drug Week – July 28, 2006

Medicine & Law Weekly – July 28, 2006

Biotech Week – July 26, 2006

Elder Law Weekly – July 26, 2006

Cancer Weekly – July 25, 2006

Life Science Weekly – July 25, 2006

Science Letter – July 25, 2006

World Disease Weekly – July 25, 2006
Biotech Business Week – July 24, 2006
Clinical Oncology Week – July 24, 2006
Health & Medicine Week – July 24, 2006
Pharma Business Week – July 24, 2006

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FAMU students find hope at Moffitt

By ERNEST HOOPER, Times Columnist
Published August 11, 2006

Four Florida A&M students caught the bug this summer at the H. Lee Moffitt Cancer Center and Research Institute.

The bug is that fascinating blend of passion and joy all Moffitt employees seem to radiate as they pursue a cure for cancer. Despite being the scene of daily battles against the insidious disease, Moffitt remains a place of upbeat hope, as the students of Project INSPIRE quickly discovered.

"It's not the 'i' in science that keeps us going; it's knowing there are many others working along with you to accomplish the same thing," said FAMU student Alrena Lightbourn.

"That's where the passion comes from and that's why people are happy in their lives, because they understand what they're doing, they like what they're doing and everybody hopes real hard that it makes a difference."

INSPIRE stands for Interest, Need, Stimulate, Persevere, Ideas, Relevance and Excellence. The new program seeks to get more young scientists involved in cancer research as a means of dealing with health disparities among African-Americans. The quartet concludes its three-month stint Tuesday.

The group concentrated its research on prostate cancer because black men are more likely to be diagnosed with prostate cancer and more likely to die from it. Dr. Nagi Kumar, director of nutrition at Moffitt Cancer Center and coordinator of the INSPIRE program, says she hopes to create a cadre of culturally sensitive researchers who can tackle the disparity issue.

Jarrold Carrol is thrilled with the possibilities of affecting his community in a positive way.

"It becomes something personal," Carrol said. "I'm able to say my family has been affected by this. I'm able to effectuate positive changes in the lives of Americans, especially African-Americans."

Carrol and Lightbourn - along with Matilda Oniyelu and Lakeitha Harrison - came to Moffitt seeking lessons and motivation, and they leave with both. But what they leave in the hearts of Moffitt's veteran staff is just as important.

"They're very, very inspiring," said Kumar, who has worked at Moffitt for 20 years. "All four of them had an instant connection with me. I told them, this is the real thing.

"I told them you don't have to be at Harvard, you don't have to be at all the big schools. In your life, you just have to reach a stage in your education that is inspiring to you. Hopefully, this Moffitt is where it is for them."

Richard Gonzmart knows all about Moffitt's good work as a board member of its Lifetime Cancer Screening and Prevention Center.

However, it's Gonzmart's passion for the community that has earned him a place in the Florida Tourism Hall of Fame. The state's tourism arm, Visit Florida, makes the selections each year to recognize "contemporary and historic figures whose vision, creativity and drive has had a positive and significant impact on the development of Florida as a desirable destination."

Gonzmart, the president and fourth-generation member of the Columbia Restaurant Group, was cited for being a tireless ambassador for Tampa and the state of Florida. He joined fellow 2006 inductees Orlando marketing executive Ed Gilbert and inventor Thomas Edison.

Interestingly, both Edison and Gonzmart overcame dyslexia to succeed.

Kudos to McDonald's Restaurants of Tampa Bay, which will give \$37,000 next week to the Florida Suncoast affiliate of the Susan G. Komen Breast Cancer Foundation.

It's an impressive total when you consider that the funds were raised in the six days surrounding Mother's Day. McDonald's locations in 10 Bay area counties sold pink ribbons to benefit the foundation, and all proceeds from the sale of apple pies May 13 and 14 also went to the foundation.

The best news is that because the funds are being donated to the local affiliate, 75 percent of the money stays here in the community.

That's all I'm saying.

Ernest Hooper can be reached at (813) 226-3406 or hooper@sptimes.com.

FAMU STUDENTS FIND INSPIRATION

Funded by the Department of Defense, this summer the H. Lee Moffitt Cancer Center & Research Institute joined forces with Florida A&M University (FAMU) to launch a new undergraduate Summer Internship Program called Project INSPIRE (Interest, Need, Stimulate, Persevere, Ideas, Relevance and Excellence). The program is designed for promising FAMU students to provide opportunities and meaningful research experiences that will lead to attracting this group into careers that focus on prostate cancer research.

At Moffitt Cancer Center, Jarrod Carrol, Lakeitha Harrison, Alrena Lightbourn, and Martilda Oniyelu learned and experienced first-hand the skills needed to become “well-trained scientists in a rich research environment with mentors who are experts in the field,” says Nagi Kumar, Ph.D., R.D., FADA, Director of Project INSPIRE and Nutrition Research at Moffitt Cancer Center.

In keeping with the Moffitt-FAMU Minority Prostate Cancer Training and Research Center partnership, the interns focused their research on health disparities among African-American men and prostate cancer. “Hopefully, we have inspired them to pursue graduate studies in the field, where there is a dire need of minority scientists. It is critical for us to reduce this disproportionate burden of prostate cancer incidence and mortality in African-American men and they now know that they have this responsibility,” says Dr. Kumar.

Carrol, Harrison, Lightbourn, and Oniyelu were excited to work side by side with scientists and faculty in a scientific environment where they were mentored and taught in biomedical, clinical and population sciences research.

“I’m definitely learning new ways of thinking,” says Carrol.

The partnership will continue to enrich and inspire FAMU students interested in eliminating health disparities in African-American men and in pursuing careers in prostate cancer research.

“Actually, I’m getting interested in oncology right now,” says Oniyelu.

“We expected to explore. We expected to find new ways of thinking about the science and new ways of applying our skills,” says Harrison.

After spending their summer exploring new territories, the young FAMU students left Moffitt with the vision of making a difference in prostate cancer research and changing the statistics with regard to disparities in incidence and mortality.